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LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

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A SUGGESTION FOR DETROIT RIVER.

A Spanish engineer named Pallacio has designed and constructed a curious new suspension bridge near Bilbao which might be easily mistaken for a specimen of Yankee ingenuity. It takes the place of a ferry between the towns of Portugalete and Las Arenas, at the mouth of the river Nervion on the Bay of Biscay, where the frequent storms and strong currents render crossing extremely dangerous and sometimes suspended traffic entirely, to the manifest inconvenience of the 10,000 passengers who used the ferry daily. The bridge is 150 feet high and is supported by two iron towers each 200 feet in height. There is no traffic over the bridge itself. It serves simply as a track for rollers which guide across the river huge cars suspended by heavy steel cables, transporting passengers, vehicles and other heavy freight. With three wagons abreast on the platform of the car there is space enough for 200 passengers. The rollers above are operated by steam, and in the brisk breezes are greatly aided by a heavy sail attached to the front of the car. It runs high enough above the water to permit small vessels to pass beneath it. The entire cost of the bridge was less than $135,000.

A CHALLENGE.

To the Editor of The Marine Record:

Can you find me a backer? If so, I will challenge any man for a race from any lake port to any port on the other side of the Atlantic, or from any lake port to San Francisco, the start to be made upon opening of lake navigation, 1894, and by one man alone in sail craft not over 45 feet on water line. I will make the trip in my boat Nina that I built here last winter.

MILWAUKEE, Feb. 1. ADOLPH L. FRIETSCH.

TO PREVENT SHIPS FROM SINKING.

John B. Davids, of Dartmouth, England, has secured patents in this country, Canada and Great Britain for a device to prevent vessels at sea from sinking, even when in collision. It consists of a large number of independent air cells, or chambers, placed throughout a vessel in out of the way places. They are made of various sizes and are so constructed as to fit in between the ribs and deck beams, under the lower berths and inclosures along the entire length of the vessel. The object of confining the air in small independent cells is that it may be distributed equally and due regard may be given to the center of gravity of the vessel. The cells will be light in weight, only about forty pounds being required to uphold a ton above the surface of the water. Alloy of aluminum will be the material from which the cells are to be made.

A NOVEL FEATURE IN LAUNCHING.

Launches have become so common nowadays that oftener than otherwise none but the builders, owners and friends directly interested care to attend them. A novel feature in the launch of the steamship North West by the Globe Iron Works, Cleveland, O., was that the vessel was christened by Mrs. F. P. Gordon, representing the owners, and launched by Miss Gertrude Hanna, representing the builders. The idea of a woman launching a vessel is a novel one, and this is the first instance of the kind that we ever heard of. But to think it over, why not? Whatever women attempt to do they do well. They have fast been taking up the lighter employments of men, until one of the sex has launched a big steamship. True, Miss Hanna did not place the launching ways or wedge the hull up from the keel blocks; neither do the builders set up the frames, put on the plates or drive the rivets; all this is left to experts. But a woman can saw off the last remaining quarter inch of the "sole-piece," which is all that holds the craft ready for launching in her place after she is wedged up off the blocks, here on the sea coast. Miss Hanna cut the hawser (the last act before launching on the lakes) that held the North West, at the given signal, after which the vessel slid into the water as gracefully as if the act had been performed by a man. The North West should be a lucky ship, having been started on her mission by the most beautiful creation on earth, a woman.—*New York Marine Journal.*

SUMMER LECTURES ON INTERNATIONAL LAW.

The Navy Department has given directions to the president of the Naval War College to prepare a course at the college for the coming summer. It is proposed by Secretary Herbert to have during this course a series of lectures on international law to be delivered by some eminent professor of that branch of law from some college or university of high standing, like Columbia, Harvard or Yale. This will be found without doubt not only timely, but also interesting and valuable to those officers who have the opportunity afforded them by the department of attending the course. It is satisfactory to know that the appropriation for the maintenance of the college is progressing favorably in the House Committee on Naval Affairs, and it is presumed that the department itself will not be backward in placing this valuable adjunct upon a broad and lasting foundation. It needs, and should unhesitatingly have its hearty and unwavering support, and certainly additional facilities both in *materiel* and *personnel*. The latter is especially lacking, as the pages of the Navy Register show. It is understood that before assuming the presidency of the college Capt. Taylor received assurance of support in conducting the college from the Secretary of the Navy and all of his chiefs of bureaus.—*Army and Navy Journal.*

SENDING A LINE ASHORE.

W. H. Littleton writes as follows to the *Scientific American* concerning a plan for sending a line ashore, which is approved by that journal, which states that it illustrated the same device some time ago:

"Noting in the *Scientific American* an article on the difficulty of getting a line to or ashore from a stranded vessel, would say I have done considerable wrecking while on the lakes. As to my success while there for over thirty years, that is for others to say. During that time I had on a number of occasions to send a line ashore. We then called it a running line. After trying buoys, boards, rafts, etc., I adopted the plan of a barrel, with a reel inside, leaded inside on the corner, and a grapple on the outside in the shape of a one-fluked anchor that was to catch on to prevent the surf from carrying the barrel back when it struck shoal water. The lead I put in heavy enough to keep the barrel partially on end, and on the bottom and side of the barrel that the grapple is attached to. The device is so cheap and simple that any sailor can make one for his vessel with little cost, and it may be relied on to help him out of a bad mess."

A TOP HEAVY WAR STEAMER.

Her Majesty's ship Resolution, one of the best war ships in the navy, as was supposed, recently left Plymouth for Gibraltar, was caught in a terrible gale in the Bay of Biscay, and had to put back to Queenstown. It is stated that during the height of the storm she rolled 40 degrees each way, and her deck rails were frequently under water. The ship had to keep her head to the wind for two days, owing to the extreme danger of her capsizing if any attempt were made before the gale abated to turn her head toward port. Two men were washed overboard together, but the captain of the torpedo catcher Gleaner, it is reported, jumped overboard, and, with the assistance of the Resolution's lifeboat, saved one of the men. The other disappeared. It is understood that at times the Resolution was in the gravest danger, being almost unmanageable and at the mercy of the seas which broke over her. Water in hundreds of tons got in the between decks and one of the boats was smashed.—*Scientific American.*

NEWS AROUND THE LAKES.

CLEVELAND. O.

Mr. John C. Fitzpatrick, agent at Buffalo of the Cleveland & Buffalo Transit Co., is spending this week in Cleveland.

Work on the tugs building at the Globe yard for L. P. & J. A. Smith is being pushed, although there has been a little delay in the arrival of material. The frames and plating of the big new deep-draft freighter are nearly all now in the yard, and part of the keel plates have been laid on the blocks.

At the Globe shipyard all the heavy pieces of the machiney of the passenger steamer North West have been lowered into the engine room and work will begin at once at putting on the remainder of the deck house. The engines are going together rapidly, all the big cylinders being in position, as well as the galleries, and all the heavier parts.

The steamer C. B. Lockwood was taken out of the Ship Owners' dry dock Wednesday afternoon, her repairs being so far advanced that it was unnecessary to keep her dock any longer. It has not yet been decided just when the Colonial will enter the dock, and general manager George L. Quayle will take advantage of a two weeks' lull to take a short rest in Florida.

At the Cleveland dry dock a fine new twenty-ton derrick, with its operating engine, is being constructed on the west side of the basin near the gate. It will be found invaluable in lifting wheels and pieces of heavy machinery. There are about a dozen hand windlasses along the edge of the dock at intervals, to assist in getting vessels into the dock and properly over the blocks.

The annual meeting of the Vessel Owners' Towing Co., was held last Thursday, the old officers and directors being re-elected as follows: Directors, Capt. W. A. Collier, C. E. Grover, W. Logie, William Kennedy, and M. A. Bradley; president, C. E. Grover; vice president, William Kennedy; secretary, treasurer and general manager, W. A. Collier.

The annual mecting of the Cleveland & Buffalo Transit Co., held at Two-Minute Villa, Hon. W. J. White's home, resulted in the re-election, for another year, of M. A. Bradley, G. W. Gardner, J. K. Bole, D. Shurmer, T. F. Newman, R. C. Moodey and H. D. Goulder as directors and president M. A. Bradley and secretary, treasurer and general manager T. F. Newman.

The Cleveland Ship Building Co. has begun work on the triple expansion engine for the new steel steamer being built by the Chicago Ship Building Co., the contract for which was recently awarded. The cylinders will be 23, 38, and 62 inches in diameter, by 40 inches stroke of piston. Steam will be supplied by two Scotch-type boilers, which the Cleveland people are also building. The boilers are 14 by 13 feet, and will each have three 46-inch furnaces.

The stockholders of the Shipowners' Dry Dock Co. met in President Wilson's office Tuesday and elected the old directors who, in turn, chose the old officers for another year. Capt. George Stone is vice president of the company, George L. Quayle secretary, treasurer and general manager, August Cold assistant general manager and H. D. Goulder attorney. The non-office holding directors are Messrs. Valentine Fries, Robert Wallace, H. D. Coffinberry and J. E. Upson.

Chaplain J. D. Jones, of the floating Bethel, is distributing copies of the fifteenth annual report of the Floating Bethel Society. It is an intererting book, but it does not tell half the good the chaplain does in the course of a year. The chaplain's mission is the only one that is directed especially to those following the lakes, and any one wishing to contribute to such a cause as that should make sure that their contributions reach the one-armed chaplain, who spends all his time looking after the spiritual and temporal wants of the poor.

Capt. W. S. Mack, chairman of the committee appointed at the annual meeting of the Lake Carriers' Association at Detroit to take steps to have the price of trimming ore at Ashland, Duluth, Two Harbors, Marquette and Escanaba reduced, has heard from the trimmers at the two last named ports and they refuse to make any reduction in the rates unless the work is all given to one man, which cannot be done. The committee will make a report at the first meeting of the finance committee in March.

A large number of people accepted the handsome invitations set out by M. E. B. A. No. 2 to attend their annual ball, which was given at Army and Navy hall Tuesday evening. The efficiency of Messrs. O. N. Steele and J. B. Wood as floor directors and M. B. Sturtevant, J. B. Heyward, H. T. McAuley, A. N. McDonald, H. W. Burton, William H. Kennedy and Levi Walder as floor managers, contributed materially to the success of the entertainment. R. L. Peck, Frank Hanky, M. B. Sturtevant and J. N. Kirby constituted the committee of arrangements, and G. M. Stoddard, A. J. Aiken, John Smith, J. L. Chase, William Kennedy, and Silas H. Hunter the reception committee. The proceeds are to be donated to the associated charities.

CHICAGO, ILL.

Special Correspondence to The Marine Record.

There is very little shipyard work doing here.

J. J. H. Brown and J. B. Rodgers of the firm of Brown & Co., Buffalo, were in this city Tuesday.

The steamer City of Rome has received a new rudder stock.

The V. O. T. Co.'s tugs towed the steamer John Owen and Thomas P. Sheldon Monday, and steamers F. E. Spinner, John N. Glidden and S. R. Kirby Tuesday to elevators to load grain.

The I. T. Line tugs towed the steamer W. P. Ketchum Monday, her consort the G. B. Owen, the schooner McWilliams and steamer C. H. Green and consort Our Son Tuesday to elevators to load grain.

J. J. Rardon & Co., chartered the steamer Roumania and Barlum, in winter quarters at Milwaukee to load corn at South Chicago for Buffalo at 2¾ cents and the steamers Hesper and Mecosta for Buffalo at 2¾ cents.

The stocks of grain in Chicago elevators and afloat last Saturday evening were 21,721,000 bushels of wheat, 7,201,000 bushels of corn, 998,000 bushels of oats, 231,000 bushels of rye, and 129,000 bushels of barley. Total, 30,280,000 bushels of all kinds of grain, against 27,658,000 bushels a year ago.

The Dunham T. & W. Co.'s tugs Perfection and T. T. Morford left here early Tuesday morning to tow the steamer Roumania and Barlum to South Chicago to load grain. The company's tugs towed the steamer New Orleans Saturdry, schooner J. C. Fitzpatrick, Monday and the schooner H. A. Hawgood and steamers Hesper and Nyanza Tuesday, to elevators to load grain.

The Vessel Owners and Masters' Association held a meeting Tuesday morning which was largely attended. The meeting was adjourned until Wednesday out of respect to one of their members, Capt. Nelson Peterson, who died the previous Saturday, and to give the members of the association an opportunity to attend his funeral, which took place Tuesday afternoon.

The grain carrying capacity of vessels in winter quarters at this port is about 10,800,000 bushels. 5,200,000 bushels of grain cargoes were put on board up to February 1, and capacity for about 2,000,000 bushels have been chartered since that date. Grain freights are lively here this week on the basis of 2¾ cents on corn to Buffalo, which is ¼ cent higher than last week and hopes are entertained that the rate on corn will soon reach 3 cents.

The following charters have been made this week by Elphicke & Co.: The steamer John Owen for 105,000 bushels of corn at 2½ cents; steamer C. W. Elphicke for corn to Buffalo at 2¾ cents; schooner McWilliams, corn to Ogdensburg, at 4⅛ cents; by Capt. John Prindville, steamer Sitka, 75,000 bushels wheat to Buffalo at 2¾ cents; steamers John N. Glidden and C. H. Green, and schooner Our Son, corn to Buffalo at 2¾ cents; by Carr & Blair, steamer George T. Hope and schooner John C. Fitzpatrick, corn to Buffalo at 2¾ cents; by John G. Keith & Co., schooner H. A. Hawgood and steamer Elfinmere, corn to Buffalo at 2¾ cents; by Cook, Calbick & Co., steamer New Orleans, 73,000 bushels corn to Buffalo at 2½ cents; steamer W. P. Ketcham and schooner G. B. Owen, corn to Ogdensburg at 4 cents; by W. M. Egan, steamer William Edwards, schooners Golden Age, Foster and Page; steamers S. R. Kirby, E. M. Peck, City of Genoa, F. E. Spinner and schooner T. P. Sheldon, corn to Buffalo at 2¾ cents.

WILLIAMS.

BUFFALO, N. Y.

Special Correspondence to The Marine Record.

The Western Transit Co. is still in the lead so far as apparent activity and preparation for spring business is concerned. Last week the company bought the scow-schooner Ben Brink of Hobard & Sons, Pequaming, for $7,000, and it is said that there is a contract for the steamers Gratwick, Gilbert, Weed and Livingstone, though it is understood not to be an iron-clad one, but does not oblige the company to run the boats unless there is business. The company some years ago bought the schooner Gray Oak for use as a lighter on Lake Superior and the Brink will now join company with her.

The report that the Inland Lloyds is dead and will not be published this season, is without any foundation in fact. The meeting of the Inland Lloyds will be held at Detroit, in ten or twelve days.

The opening of the Buffalo Yacht Club's new house at the foot of Porter Avenue, which is scheduled for the early spring, will mark a new era in aquatic sports, not only at this port, but along the length of Lake Erie. Overcoming what seemed impassable obstacles the building committee of the club has succeeded in completing the handsomest and most conveniently arranged yacht club house on the lakes. At the annual election, Mr. Henry M. Birge was elected vice-commodore to succeed Allan Chisholm, the latter being engaged in business at his home in Canada. Two seasons ago Mr. Birge and his brother brought the steam yacht Whisper to Buffalo, the finest vessel of the kind which had ever been enrolled in the club. This year they promise another acquisition to the fleet in the shape of a sailing yacht. Whether it will be a schooneer or a sloop has not yet been decided, but one thing is certain, whatever the rig they decide on their new boat will be one of the large class and will be selected for her abilities as a racer as well as for cruising qualities.

Several other members of the club have expressed their intention of adding new boats to the fleet. Edward Dold proposes to bring a naptha launch here from salt water; a syndicate of new members are looking for a sloop yacht which will class with the Merle, and are considering one on Lake Ontario, and another which is in commission now on salt water; another syndicate of four are figuring for a steam yacht, and have two now under negotiation, one of which will undoubtedly be added to the Buffalo fleet. In addition to this several yacht owners whose boats have not heretofore been enrolled in the club have appiied for membership.

Ex-Vice Commodore Allan Chisholm and his brothers have sold the little cutter Erchles to Lewis G. Northrup, the fleet captain, who will fit her out in time for the opening cruise. The Volante, another club cutter which has never been brought out here, will probably be an active member of the fleet this year. During the summer of 1893 she was wrecked in Boston waters and has not been put in commission since. Her owner, Mr. Richard B. Hoffman, purposes submitting her to a survey shortly to determine just how extensive her injuries are, and if he finds it feasible to fit her out, will bring her to this port early in the season. Mr. Allen Munroe will also add to the fleet a speedy and natty jib and mainsail racer, which will give Dr. Hussey's Nerena a lively hustle in her class, if indeed the latter boat remains in the club. Dr. Hussey is contemplating selling her and buying a larger boat of similar type by the same designer and builder as Nerena. Mr. E. P. Sears, will in all probability, bring his sloop yacht Desiree, out here from salt water, early in the season.

Early Tuesday morning fire was discovered in a saloon adjoining the offices of the Union Dry Dock Co. Before the flames could be extinguished two saloons were gutted and the dry dock building partially destroyed. Superintendent Edward Gaskin estimates the loss of structure and contents at about $25,000, some very valuable drawings being included in the lost property.

The same morning, about daylight, fire broke out in the big four story building known as the Marine Block, at the corner of Ohio and Mississippi streets. The loss on the building will not exceed $2,000, but water damaged the books of some of the tenants. The building was occupied by the offices of the Toledo, St. Louis & Kansas City steamers, the Ward Line, and the Cleveland & Buffalo Transit Co.

PORT HURON, MICH.

Special Correspondence to The Marine Record.

John Jenkins, last season in the Charles Eddy, will command the steamer W. H. Sawyer this season.

Capt. John Hayes, of this city, has purchased part of the steamer Thomas D. Stenpson, he will sail her this season.

Capt. Alex. St. Bernard lies in a very low and feeble condition at his home in St. Clair, and no hopes of his recovery are entertained.

St. Clair river is blocked with ice to a point this side of St. Clair, and the Mary has discontinued her trips between this city and Algonac.

Mr. C. McElroy, of St. Clair, intends to build a steamer to run between Port Huron and Detroit, he says that the new boat will be the fastest passenger boat on the lakes. She will be a screw steamer 200 feet in length.

It is reported that Selkirk & Hanon have sold the tug W. G. Hanon to Cleveland parties for $7,500 and the tug Roy included. The Hanon will go into the fish business at Cleveland.

F. M. Wooley, ex-clerk of the City of New Baltimore, died on Sunday morning last after a brief illness. He was a member of Lake St. Clair Lodge, No. 296, I. O. O. F., of Marine City. He leaves a widow and five children, the oldest of whom is married and the youngest about seven years of age.

James J. Lynn and Chas. D. Thompson are building a new harbor tug at this port. She will be 96 feet long, 21 feet beam, 11 feet hold, engine 16x32x30. Her boiler 9½x14½, allowed 130 lbs. of steam she will have a full weekly outfit and will have all the latest improvements. James Mason, of Buffalo is here, superintending the building of her.

An important change of transfer in the ownership of the steamer Mary took place Wednesday. Hon. C. McElroy, of St. Clair, and Hon. Frank McElroy, of Marine City, sold their interests in this swift sailing and handsome passenger propeller to Capt. S. H. Burnham, of

Port Huron; S. E. Pearce, and Dr. W. K. Moore, of Algonac, and George W. Moore, of Port Huron. The Mary is the finest and swiftest sailing steamer of her class on fresh water. Capt. S. H. Buraham and Clerk S. E. Pearce, have charge of the management of the boat under her new ownership. Capt. Burham says he will keep the Mary on the river route.

LORAIN.

Special Correspondence to The Marine Record.

Lorain has some fine prospects, judging from rumors and indications. There are two railroads to the south of us who look upon Lorain as a profitable terminus. This town has plenty of available river frontage, and offers more attractions to the coal roads in this respect than do the larger cities.

The mayor has received a letter from Congressman W. D. Harter. He says he thinks he has arranged so that Lorain will be treated as liberally as any other port on Lake Erie, but claims he has been badly handicapped by the estimates of Col. Jared A. Smith, the United States Engineer, which are, in Mr. Harter's opinion, far too small.

The tug Daisy was sunk last week by ice through which she was trying to break her way. She was outside when the leak was noticed, but was run to her dock just beneath the viaduct, where she sunk in spite of all efforts to prevent it. Chains had been passed under her, however, and she was soon hoisted out of the water with the aid of the schooner Alice B. Norris, which was towed alongside.

The report that the Cleveland, Lorain & Wheeling intends to direct a large part of its lake coal trade to Cleveland, on account of a disagreement with the Reid heirs in regard to the price they ask for the dock property now leased to the railroad, has no apparent foundation. In fact, Mr. James Reid says the new C. L. & W. officials here have never asked for a price on the land, and that the company's lease on the river frontage has still nine years to run from next April.

ASHTABULA, O.

Special Correspondence to The Marine Record.

Col. Jared A. Smith has issued a call for bids for making repairs to the keeper's dwelling at Ashtabula light station, including modifications of kitchen, dining room and cellar. Bids will be received till Wednesday noon.

Material of the new coal loading machine which is to be erected on the lake front dock by Pickands, Mather & Co., has arrived over the Lake Shore railroad from the Variety Iron Works, Cleveland, who are putting up the machine. The work of erection will begin soon and it will be ready for the opening of navigation.

The Geeser wrecking crew has laid up the tug True and will make no further attempts this season to work on recovering the ore on the sunken schooner Pelican. There is now so much ice in the lake that it is dangerous to work. Capt. Isabel, the diver who has charge of the work, has removed his family here for the coming season. It will probably consume the greater part of next summer to get the ore out.

The Lake Shore Railroad Co. have for the last few days been taking soundings in the slip and winding place in the vicinity of Minnesota, Lake Angeline and No. 5 docks, by cutting holes through the ice, the object being to ascertain the depth of water in order to estimate the amount of dredging that will be required in the spring. It has been found that but little mud has accumulated in the slip, the water averaging about seventeen feet.

COLLINGWOOD, ONT.

Special Correspondence to The Marine Record.

The steamer City of Midland is receiving her new cabin work.

The owners of the tug Charlton, which is receiving repairs here, are considering the advisability of rebuilding her throughout.

The length of the tug which Mr. Alfred Morrell is building for Mr. H. McInnis, of Meaford, is 57 feet long, and not 30 feet, as stated last week.

It is understood that the Dry Dock Co. have been awarded a contract to build a large tug for Messrs J. and C. Noble. The dimensions have not yet been given out.

TORONTQ, ONT.

Special Correspondence to The Marine Record.

Capt. Andrew Thompson has sold the schooner Singapore, as she lies on the beach at Charlotte, to Capt. S. S. Malcolmson, who sailed the schooner Laura for many years and was in her when she foundered off Charlotte in a heavy gale last summer.

Capt. A. H. Malcomson, of Hamilton, has purchased a share in the propeller Ocean, now lying in St. Catherine's where she is being overhauled under his supervision. She will receive a new Scotch boiler 10 feet 6 inches by 11 feet, to carry 105 pounds of steam, built by Messrs. John Inglis & Son of Toronto.

The Hamilton Steamboat Co., have re-engaged the same captains that they had last season. Capt. Sharpe will sail the Modjeska and Capt. Zealand will sail the Maccasa. Mr. Ed. Bishop, who was last season purser of the steamer ocean has been appointed to act as the Toronto agent of the company in place of Mr. Fergus Armstrong, who has been promoted to the position of general manager.

NEWS FROM THE ATLANTIC COAST.

Special Correspondence to The Marine Record.

The Atlantic Works, of Boston, are building two tow boats.

Osborn, of Peekskill, is building a sixty-foot steam launch.

The Jersey Central are going to build a steam coaler of 2,500 tons.

The Merritt Wrecking Co. are in to build a new twin screw wrecker.

Dialogue has just closed a contract to build a new tow boat for the Jersey Central.

Skinner & Arnold, of Albany, are building a small tow boat for the Rowan Line.

The Drummond Boiler Works are getting out new boilers for several large yachts.

The Herreshoff Manufacturing Co., have completed the yacht they have had under way.

Weofie & Levy are building four small boats and have just completed a tug for the Red D. Line.

The Morgan Iron Works, of New London, Conn., are overhauling the light-house tender Cactus.

The City Island yards are doing nothing and in and about New York there is not much being done.

H. Ramsey, of Perth Amboy, is overhauling two steamboats and a number of harbor tow boats.

The New England Co. have received a contract for a good-sized freight and passenger steamer for Eastern waters.

The Maryland Steel Co. have no new work. They have just launched Mrs. Carnegie's yacht and are doing some repair work on Baltimore boats.

Seabury, of Nyack, has two new yachts building, and Smith, of the same place, is overhauling the North river boat Raleigh, in which a jet condenser is being placed.

The Newport News Ship Building Co. have closed a contract for a new gunboat, a new Morgan Line boat like El Cid, engines and boilers for the Cromwell Line steamer Louisiana.

The Bath Iron Works are completing the new Norwich Line boat, City of Lowell, and the Elnore, Mr. Slater's new yacht. They are figuring on a contract for a large 300-foot steamship.

Robert Palmer, of Noonk, Conn., is building a small steam fishing smack for Mr. Ashley. They are also putting a new cabin on the Erie ferry boat, Jay Gould, and doing a number of small repair jobs on yachts.

The Oneco Manufacturing Co., of New London, Conn., have six steam fishing boats lying at their works in which they are putting surface condensers. They have always been high pressure.

Peter Magee, of Athens, is building two excursion barges and Marvel, of Newburg, has fourteen large Hudson river tugs to overhaul and is constructing two steel locks for the Navy Yard drydock. Also a new twin screw boat for Mr. Donough. She is for the lake trade. Her engines will be 10 and 20½ by 12.

NOTES FROM ALL PORTS.

Thomas Adams, of Detroit, has sold to J. W. Wescott, of that city, and M. P. Scott, of Port Huron, the barge Shawnee for $8,000.

Ice pulled oakum out of the seams of the small river steamer L. S. Payne, at St. Joseph, Mich., and she sunk in ten feet of water.

The new Detroit river ferry boat at Wheeler & Co.'s yard, Bay City, is all in frame, and work on the upper works is about to be started. She will be ready for launching in May.

The total duties collected at the port of Toronto for the month of January, 1894, were $434,714.93. The duties for the same month last year, were $475,339.59. Decrease, $40,624.66.

The car ferry steamer Ann Arbor No. 2, is in the stationary dry dock at the south yard, Milwaukee, for a new wheel, and for repairs to shaft and stern bearing.

At Alpena a new compound engine has been placed in the fishing tug Maxwell A., at Port Huron. The tug Wayne Isbell is also receiving a new compound engine, her bulwarks are being raised, to give her more sheer forward.

The steamer George P. Savidge will again do service. Her keel has been recovered and her machinery is now being refitted. The machinery and keel will be shipped to Tower and transported overland to the connecting waters of Rainy lake, where the boat will be rebuilt and placed in service on the opening of the summer route.

It looks as if Bailey's Harbor was going to have a life-saving station after all. Roger Eatough received a letter from L. E. Barnes stating that the station would be built next summer without fail, work to commence about the first of July.

The Gas Engine and Power Co., of Morris Heights, N. Y., is constructing a naphtha launch especially built for high speed, to the order of Messrs. Weber Bros., of Toledo. She is to be 26 feet long, with 5 feet beam, and engines six horse power.

Capt. Nicholas Stone, an old resident of Sheboygan, is dead at the age of 65 years. He was a well known navigator and for many years sailed the schooner Island City. After his retirement from sailing he was harbormaster at Sheboygan for several years.

Last Thursday afternoon, while men were working on the Fairport docks at a pile of frozen ore, a large section fell from the ledge above them. All escaped injury except one laborer; Mike Bolenski, whose left arm was caught by the descending ore and literally torn from his body.

Seven vessels have thus far been loaded at Detroit with wheat, their cargoes aggregating 400,000. The vessels are the Tokio, George W. Adams, Mary B. Mitchell, Nelson, J. I. Case, Raleigh and Melbourne. There is some talk of loading the big steel steamer Centurion next.

It is estimated that the water diverted through the proposed canal from the Great Lakes, will raise the low water level of the Illinois river about seven feet, that of the Missisippi river at St. Louis at least one foot, and probably six inches at Cairo at the junction with the Ohio river.

The usual yearly contract has been entered into between the Star-Cole and Red Star lines of steamers whereby there will be no strife between the companies on the river route. It has been decided that the Greyhound, Idlewild, and Arundel will run between Detroit and Port Huron and the Darius Cole to Toledo.

The Sturgeon Bay *Advocate* states that the scow South Side is going to pieces in Bailey's harbor and the ties with which the hold was filled are being scatter far and near by the action of wind and wave. The loss of the latter falls on Theodore Plathner of the craft on Johnson & Knudson, of Newport. The vessel has been purchased by Capt. Charles Morbeck, but as she was not paid for the loss will naturally fall on the firm.

In the summer of 1892, Capt. Albert Kemp, of Bangor, Mich., built a large sail boat, and with his family on board, set out to go to Florida by water. Reaching Lake Michigan he sailed along the shore to Chicago, thence to the Illinois river where winter overtook him. Embarking again in the spring, he floated down the Mississippi, where, after a perilous trip, the boat is now blockaded in a bayou near Vicksburg by a log jam. The doughty navigator does not despair, however, and writes to his friends at home that he expects to reach his destination some time the coming summer.

A good story is told on Capt. Rice, of Port Huron, and Capt. Shaw, of Marine City. They were delegates to the Ship Masters' Convention at Chicago last week and put up at the Tremont House, with the rest of the captains. The Northwestern Buttermakers were stopping at the same hotel. The captains were assigned rooms on the third floor and the butter makers on the fifth. By mistake the clerk of the hotel mistook Capts. Rice and Shaw for farmers, and for three days they occupied rooms with the tillers of the soil. At the end of the fourth day the mistake was discovered and rectified.

The Lakes St. Clair and Erie Ship Canal Co. has been organized at West Superior and will establish headquarters at Milwaukee, it is said. The capital stock is placed at $250,000. The idea of the company is to build a canal from Lake St. Clair to Lake Erie, thus avoiding Lime Kiln Crossing and other dangerous places, and shortening the route to Buffalo 100 miles. The stockholders include some of the prominent men at the head of the lake, also capitalists of the twin cities, Chicago and Eastern people. D. F. Henry, of Detroit, is chief engineer of the company and W. C. Porter, of Minneapolis, is treasurer.

Edgar A. Davis denies that the financial embarrassment of the Davis Boat & Oar Co., resulted to any extent from any dishonesty or mismanagement of its business affairs by himself. He lays the financial embarrassment of the company to the large loss on two big steam yachts built during the year; to the interruption of its business caused by the removal of its plant from Detroit to Wyandotte; to the large expenses for the erection of buildings, and preparation for the Wyandotte site, and for the purchase of the necessary machinery for building engines, boilers and large steam yachts; to the financial panic of the past year, by which the company's business fell off 75 per cent. and finally to the difficulty in which John Cudahy of Chicago, vice president of the company, became involved, and by which the company lost credit in the Detroit banks. Next Tuesday at 12 o'clock noon, receiver Worcester will open bids for the property.

MARITIME LAW.

NEW YORK & N. E. R. CO. v. CHURCH et al.

Circuit Court of Appeals, First Circuit. September 13, 1893.

1. DEMURRAGE—STIPULATION FOR PRECEDENCE IN DISCHARGE—BREACH. A breach of a stipulation in a bill of lading giving the vessel precedence in discharging, under pain of double demurrage during time lost by failure to do so, entitled the vessel to such demurrage, although she is not detained, altogether, beyond the lay days allowed in the preceding part of the bill.

2. SAME—RATE OF DEMURRAGE—STIPULATION CONTROLS. Demurrage will be allowed at the rate stipulated in the bill of lading or charter party, unless at least, the loss to the ship is shown to be less.

P. J. RALPH et al. v. TUGS WELCOME AND JOHN E. MONK.

N. D. Ohio, Eastern Division.

STRANDING—LIABILITY OF TUGS. Libel to recover for damages caused by the failure of the tugs John E. Monk and Welcome to perform a certain contract of towage service, entered into on or about Dec. 16, 1890. Filed Feb. 3, 1894.

Ricks, District Judge. The facts established by the testimony are that on Dec. 2, P. J. Ralph & Co. wrote from Detroit notifying Henry Lay & Co., that they had the schooner Mabel Wilson loaded with iron ore at Escanaba, which they contemplated unloading at the ore docks at Sandusky, provided she could be taken in all right, and the tugs would not charge too much for their services, and provided a sufficient draft of water could be safely assured them. To this Henry Lay & Co. replied: "Should you conclude to deliver the cargo in Sandusky, please advise us as soon as possible and we will keep our tugs in commission. The other tugs are already laid up for the winter. Our charges for putting her to the dock in good shape will be $48. Owing to her size it will be necessary to have both tugs, but will not charge you any more."

When the schooner appeared at the entrance of Sandusky harbor some days afterwards, in tow of the tug Gladiator, she was met by the tug Welcome. Captain Thompson, of the Mabel Wilson, inquired as to whether the captain of the tug thought it safe to proceed into the harbor, and the latter replied that he would see. He turned about, proceeded up the channel two-thirds of the way, taking soundings, and then returned to the schooner, reporting everything as safe and satisfactory, and that he would be able to take the schooner in. Capt. Thompson then inquired for the second tug, and was told that it was inside and would be ready to help when needed.

It was unusually late in the season for a vessel of that tonnage to undertake to enter the harbor of Sandusky. The buoys and stakes in the channel had been taken up and supplanted by scantlings. The season of the year made it extremely probable that ice might form any night so as to make it difficult to enter the harbor. Under these conditions it is not unreasonable that the libelants should claim that they contracted for and contemplated that they would have the services of two tugs. It was a time when the libelants would naturally prefer some additional expense to secure such speedy and more certain towage. A few days' delay might be fatal. The letters, fairly construed, make a contract on the part of the respondents under which they were to furnish two tugs. The contention of the respondents that two tugs were never used and could not be used to advantage in towing so large a schooner up the channel, is best answered by the testimony of Capt. Whetstone, of the tug John E. Monk. The only occasion when he ever knew of two tugs being used was when the schooner Magnetic wanted to get into the harbor in a hurry. An exactly similar condition was now presented. The answer of the respondents sets forth a condition of things in the harbor of Sandusky which would indicate very good reasons why it was necessary to have two tugs in just this emergency. The proof confirms the answer in this regard, and it is very clear that after the tug and schooner had entered the channel and were approaching stake No. 6, the outward current was very strong and the scantlings were so far submerged that most of them were invisible. Knowing of the knuckle on the bar (where the Wilson ran aground), and that it was necessary to make somewhat of a detour and run the channel on the ranges instead of by the stakes, there was just such an emergency presented as made the services of a second tug valuable and almost indispensable. Whether the stranding was from the want of the services of the second tug, or because of the poor navigation of the channel by the tug Welcome, is immaterial.

I think, considering that the libelants took extreme precautions in arranging for the presence of two tugs, that the respondents were not equally cautious and prudent on their part. I do not think any just criticism can be made of the action of Mr. Ralph in the extraordinary measures taken by him to secure the speedy rescue of the vessel from her position on the bar that night. She was a valuable vessel, exposed to the winds and to the danger of being frozen in. If he had failed to use such precautions, and any accident had happened to the vessel, the defense would have been that he had abundant notice of the dangers to which the vessel was subjected and had failed to act with diligence and promptness. It is claimed that the vessel floated from the bar because the wind had changed, so that the water raised in the channel, and not because she was lightered by having 250 tons of her cargo removed. It is not necessary to determine this question. Certain it is that the lightering made her float sooner than she would otherwise have done.

In view of the findings made, it is not necessary to consider the matters set forth in the cross libel. A decree will be entered for the libelants, and a reference to a commissioner to determine the expenses that were reasonable and proper to release the vessel, and such other expenses as naturally followed the accident, including the expense of recovering the anchor and chain.

OHIO'S COAL RESOURCES.

At the regular meeting of the Ohio Institute of Mining Engineers, held in Columbus on January 17, Prof. Orton delivered a lecture on the coal resources of the State. His lecture was illustrated by the new map recently completed. He first stated that the coal area of Ohio was about 10,000 square miles. Out of about 35 veins in the state 12 or 13 seams were good for mining almost anywhere along their course. The remaining 20 were mine-supporting only here and there. The Lower and Middle Kittanning, the two Freeport veins and the great Pittsburg figured most extensively on the maps. By way of explaining the calculations soon to be arrived at, Dr. Orton said the average thickness of a seam of coal is a matter of judgment. The specific gravity of coal in Ohio is about 128. The average quantity for one foot of coal per acre is about 1,750 tons; the average 3-foot vein contains about 3,360,000 tons of coal per square mile. After more statistics in detail the different seams were considered in totals, as follows: Of Kittanning there were 3,873 square miles in the State, averaging 4 feet in depth, and containing a total of 17,351,000,000 tons of coal; of Freeport there were 3,149 square miles, averaging 4½ feet, with a total of 15,750,000,000 tons; of Pittsburg there were 1,251 square miles, averaging 4 feet, or a total of 5,600,000,000 tons; Meigs Creek, 277,000,000. The total square miles thus obtained were 8,893, and the total tons of coal 41,478,000,000. Prof. Orton deducted from this 40 per cent. for mistaken judgment and loss in mining, and left 25,000,000,000 tons as the available product of Ohio. Statistics have shown that the increase in demand for Ohio has been 6 per cent. per year. The present product marketed is about 14,000,000 tons per year. He put the output of the future at 25,000,000 for the sake of getting a basis for calculating the length of life of the Ohio coal fields, and in this way arrived at the conclusion that Ohio's coal bed would last for 700 years.

A GREAT SOUTHERN CANAL.

The matter of making more available to the public use the interior waterways of Tennessee is deservedly attracting much attention at the present time. An appropriation made by the state legislature for surveys has resulted in the presentation of an admirable report, which, by means of maps, tables and calculations, sets forth the feasibility of canals to connect the navigable waters of the Tennessee river with those of the Mississippi, with a saving of about 500 miles of navigation.

A glance at the map of Tennessee will show that the Tennessee river, in its journey to commingle its waters with those of the Mississippi, follows, in its northward course, a route which is almost parallel for many miles with that of the greater river. The Ohio receives the waters of the Tennessee at Paducah, Ky., and all the steamers, boats, etc., which use the Tennessee on their way to the Mississippi are forced to a journey around two sides of what may be termed an oblong square to reach their destination by way of Cairo. At the same time the streams flowing east and west across the state into the Mississippi have their head-waters in several instances within a few miles of the Tennessee river, and are separated from it by what is known as the Tennessee ridge, a height of land following the course of the river from which it takes its name.

The Forked Deer and the Big Hatchie rivers are two of the streams above alluded to. Both are navigable to a considerable extent, both are susceptible of further improvement and both have received attention with this object in view from the United States government. To connect their upper waters with those of the Tennessee river requires, in the case of the Forked Deer, a canal thirty miles long, and in that of the Big Hatchie, one about thirty-two miles in length.

The estimated cost of a canal to connect the Tennessee and the Forked Deer rivers is, as reported by Capt. John Jay Williams, $3,529,600. This estimate includes the building of nine locks, costing $315,000, earthwork excavation costing $2,202,500, and thirty-six miles of railroad to cost $270,000. Somewhat more than two-thirds of the excavation work could be replaced by a tunnel, two miles long, through the Tennessee ridge, with a saving in cost of about $350,000.

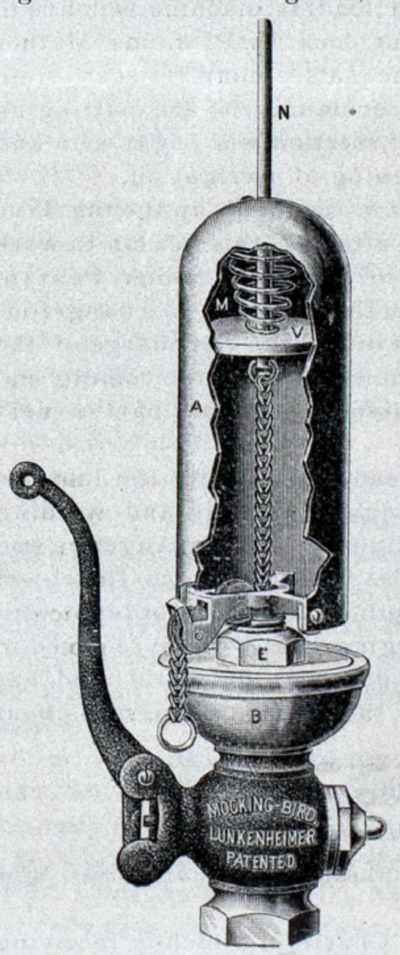
By the Big Hatchie route a canal can be constructed at a total cost of $3,973,540. This includes six locks, costing $330,000, earth excavation costing $2,765,940, and eighteen miles of railroad costing $144,000. As is the case on the other route, much of the excavation work can be avoided by a tunnel. The suggestion is made that it would be advisable for the state to employ its convicts in the work of construction. In this event the estimate is made that the canal by the Forked Deer route would cost only $2,353,070, and that by the Big Hatchie route $2,649,300.

The water supply needed for the operation of the canal, by whichever route should be selected, has been carefully provided for. The calculations show that for the Forked Deer route a daily supply will be needed of 5,240,000 cubic feet, and that the supply, to be furnished mainly from storage reservoirs, will amount to 8,334,000 cubic feet, leaving a daily surplus of 3,094,000 cubic feet. Similar sources of supply will furnish to the Big Hatchie canal all the water that will be required, and vastly more, as in addition to the storage reservoirs, it can also draw from the Tennessee river by pumps.

Capt. Williams estimates that "a total of 2,210,120 tons would have passed through the Tennessee and Mississippi river canal in 1890 had it been in operation at that time." Allowance, of course, is made for return business in arriving at this conclusion. He continues: "I have estimated the most costly route of the canal at $3,973,540, and the tonnage at 2,210,120, and placing the toll at only 25 cents per ton cheaper than by going round by Cairo, it gives a gross income of $552,530. Deducting 40 per cent. for maintenance, and we have an income of $331,518, which capitalized at 5 per cent. gives $6,630,360, showing that if the canal cost $2,656,820 more than the estimates, it would then be a good paying investment.

THE MOCKING BIRD WHISTLE.

The accompanying illustration gives a very fair idea of a new steam whistle which has been patented by the Lunkenheimer Company, of Cincinnati. It gives a variable sound, but is simple and practical and is attached like any ordinary whistle. It is especially designed for traction engines, locomotives and steamboats, and makes a very good mill whistle.



The dome-shaped bell is securely supported at its base by a three-armed prong, the stem of which is adjustably screwed into the whistle base and fastened by the jam nut E. Owing to this construction, the lower edge of the bell is always exactly in line with the slot in the base through which the steam escapes, thereby insuring the best results and a perfectly clear and loud tone. The bell is raised or lowered to suit the steam pressure by screwing up or down, and when properly set is fastened by the jam nut.

The bell is provided with a piston, which is pulled downward by a chain running between pulleys, and when not in use is always at the top, being drawn upward by means of a spring. A pull on the chain alters the sound.

This whistle is made in ten sizes, the bells ranging from two to ten inches in diameter. As all THE RECORD readers know, the company's advertisement can be found on another page.

NOTES.

A NEAT explanatory catalogue of the Metropolitan Automatic Injector has been issued by the Hayden & Derby Manufacturing Co., of New York.

THE Automatic Line Holder is the name of a new device on which E. C. Akers & Co., of Port Huron, have applied for a patent. It is intended to save time, labor and lines in tying up a vessel to the dock.

THE MARINE RECORD is in receipt of two handsome calendars this week. One is issued by Thomas Marks & Co., merchants, forwarders and ship owners, Port Arthur, Ontario. It is a lithograph and contains views of Marks, King & Co.'s elevator and the steamer Algonquin. The other is from the Climax Photo-Engraving Co., Cleveland, O., and is a beautiful specimen of their work.

PROVISION FOR NAVAL RESERVES.

Last week the New York *Marine Jonrnal* commented as follows upon the introduction in Congress, by Representative Cummings, of a bill providing for a navigating naval reserve: "Some time ago Mr. Cummings introduced a brief bill looking to the consummation of the general aim, so that the project is no new one to our legislators, but the present measure details almost enough provisions for the organization to supply it with a ready-made constitution and by-laws, and they have all been drawn up so well that the business should work in ship-shape fashion from the start. The measure does not in any way conflict with the existing naval militia, which is an entirely different sort of a force, under state laws the same as the regular militia, and calculated only for coast defense. The bill now introduced is for a service to supply the same relation to the regular navy that the big steamships of the merchant lines accepted as auxiliary cruisers do to the naval fleets. It is to be comprised only of seamen, who must be citizens of the United States between the ages of 18 and 45, and who must pass regular examinations as to nautical ability before admission to the service.

"The general provisions for the force are after the same style as those which have made the British Royal Naval Reserve such a powerful assistance in maintaining the pre-eminence of that nation upon the seas. Any one passing the examination and joining the reserve must enlist for five years, during which time he will be at the call of the general government for service at any time, and must report in person once a year at least, to a naval authority. He may attend training or practice drills for thirty days each year for promotion, and will be under the general control of the Secretary of the Navy. Petty officers will receive $30 per year compensation and privates $20, it being understood that they are not to be called upon for any active service in time of peace, but during the annual drills pay in addition will be given at the same rates as in the regular navy. Any vessel commanded by an officer of the naval reserve who shall have five other such officers under his command, shall have the right to fly from his mainmast head a distinctive flag or pennant with the letters U. S. N. R., which flag shall be supplied by the Navy Department. Officers and men of the life saving, lighthouse, revenue marine and coast signal services may be also enrolled in the reserve, and doubtless will be in large numbers if the bill passes. An annual appropriation of $100,000 is provided for the inauguration and continuance of the force—an adequate amount to start, and probably for some years to come.

"As we have repeatedly remarked before, if we are to have an efficient navy, it is essential that some backing in the shape of a reserve force be established, and it is only by some such measure as the one just introduced in Congress that it can be. We notice by the London *Nautical Magazine*, which devotes a department to the interests of the British Naval Reserve, that the admiral of the fleet, Sir Thomas Symonds, has a proposal to increase his reserve force to 98,000, instead of 23,000 men as at present, and that France and Russia have 133,000 men so trained and liable for service. We also notice that the British press seem to be justly criticising their naval reserve authorities, really their admiralty, for ignoring available officers of the reserve when a guard of honor is acquired from the corps for some public occasion, and sending it out in charge of a petty officer from a warship—a proceeding, we should say, rather discreditable to the prestige of the service, especially on occasions of prominent public gatherings in which a royal prince or princess took part. Once established, we know that the United States Naval Reserve could teach the Britishers a thing or two in that as well as other respects, and we sincerely hope we may have a chance now to do it."

NEW PIER OF THE AMERICAN LINE.

On the Hudson river, at the foot of Fulton street, New York, is situated the new pier of the American Line, which is one of the finest in America. It is situated in the immediate vicinity of the ferry termini of all the railway lines which center in Jersey City and Hoboken. It can also be easily reached by the elevated roads and cable cars. The new pier is 720 feet long; the piers in use by other lines are about 600 feet long. The width of the American Line pier is 125 feet; that of other piers 70 feet. The pier was especially built to order by the city and the annual rental is $50,000, the lease running for ten years. On this superb pier the American Line company has erected a huge superstructure at an expense of $300,000. Some of the features of this great shed are new. The building is divided into two stories. From the decks of the steamships the passengers will walk off on an almost horizontal gangway to the second floor, which resembles a large railway waiting room. To any one who has ever crossed the Atlantic or visited a pier either before sailing or on completion of a voyage, the advantage of landing the passengers away from the almost inextricable tangle of cabs, wagons and freight will be apparent. A commodious passenger elevator at the shore end of the pier will add greatly to the comfort of the passengers. Special elevators are arranged for baggage. Comfortable waiting rooms are provided, as well as telegraph, cable, and telephone service. The pier is lighted throughout with arc and incandescent lamps. This new pier, in which the comfort of the passenger is carefully considered, will probably be the forerunner of many such piers, and will be in keeping with the five ocean racers which are now being built at the Cramps' shipyard in Philadelphia for this line.

APPROPRIATIONS IN THE SUNDRY CIVIL BILL.

Last Saturday the Sundry Civil Appropriations bill was submitted to the House of Representatives. The bill appropriates a total of $32,291,382 for the fiscal year ending June 30, 1895, which amount is a cut of over $9,000,000 in the estimates of this year. The bill provides for such river and harbor improvement work as is already under contract. The new appropriations are contained in the River and Harbor bill, which will soon be submitted. The Sundry Civil bill contains the following items that are for the benefit of lake commerce: Hay Lake channel and St. Mary's River, $120,000; for moving range lights, Maumee river, $2,000. This amount is needed to grade the site and build works of protection to preserve it from erosion by river currents. To establish a light station on or near South Bass Island, Lake Erie, Ohio, $8,600. This light is to aid vessels to clear the shoals in the south passage. The passage is used by vessels to and from Sandusky, Marblehead and Toledo. Appropriation for one superintendent of life saving and life boat stations on the coast of Ontario and Erie, $1,800. Under the Fish Commission: Put-in-Bay station, superintendent, $1,500; foreman, $1,000; skilled labor, $600; machinist, $960. Survey of northern and northwest lakes, printing and issuing navigation charts, $2,000. For survey, additions to and corrections of engraved plates, available till expended, $25,000. The fiscal year in the latitude of the lakes is interrupted by the inclement season. As a matter of economy and effectiveness it is decided that field work may be organized to commence in the spring and proceed without interruption throughout the season.

SAGINAW BAY LUMBER DISTRICT—REPORT FOR 1893.

There were operated on the Saginaw river during the season of 1893 sixty saw and shingle mills, but owing to the depression in business the production fell off considerably. The mills manufactured 585,839,426 feet of lumber, the smallest quantity produced since 1873. The shingle output aggregated 112,826,000 pieces, and there was manufactured 126,257,331 pieces of lath. At the close of the manufacturing season there was on hand 311,505,056 feet of lumber, of which 25,886,430 feet were reported as sold for future delivery. The quantity on hand is considerably in excess of that of 1892, and there was reported sold for future delivery December 1, 1892, a total of 110,893,421 feet. This item indicates the extent of the depression in the lumber trade. There has been no material decline in prices, however, as in fact they are about $1.50 to $3 a thousand higher now than they were in 1892, and owners of lumber are confident that the opening of spring will create a demand for their product, and the surplus now on hand will all be wanted before the product of 1894 comes into the market.

The manufacturing district of the Saginaw river is sixteen miles in length, and less than half a mile in width, and this narrow, bustling strip of territory is still the largest lumber producer of the like area in the United States, as it has been for many years.

Following is a comparative statement of the lath manufactured by the Saginaw river mills since 1889:

	Pieces.
1889	135,940,240
1890	29,731,800
1891	153,807,800
1892	132,129,375
1893	126,257,331

There was also manufactured 18,258,906 salt barrel staves, and 1,278,039 sets of barrel heading.

A COMPARISON.

The shipments of ore for the three past seasons to Lake Michigan ports and a few other lake furnaces were, in tons, as follows: 1891, 1,504,756; 1892, 1,824,486; 1893, 506,688.

The points to which the mass of ore goes are South Chicago, Joliet and Bay View, near Milwaukee. We may say with approximate accuracy that in 1893 the furnace product at these points was 250,000 tons of pig iron as against 900,000 tons last year. As pig iron which is not produced cannot be worked up, it is safe to say that a large part of the destitution in Chicago, for the relief of which it seems desirable to raise one million dollars, is due to lack of employment in the iron trade and in trades collateral to it.—*American Economist.*

OUR MERCHANT MARINE ADVANCES.

Under the above caption the *Black Diamond*, one of the leading coal journals, has the following to say with reference to recent developments: "The recent triumps of the American built ships fueled with American coal, is a double triumph to our country and full of auguries which presage the advent in the not far distant future of that great necessity of an American foreign commerce—an American merchant marine. It is the dawn of a new era, the awakening from a new birth. Prior to the unfortunate difficulty which well nigh rift the Union in twain, we were the proud possessors of a fleet of merchant vessels that was only eclipsed by Britain and threatened to soon outvie it. In the face of prior condition of that character, it does not require any particular stretch of reasoning to realize that some exceedingly untoward circumstances must have arisen in order to have brought about the change that has occurred. By all laws of natural progress, we should have been far and away in the lead of the world to-day; as it is, we have cut but little figure. Now, however, the genius of the Cramps has brought to light the fact that native talent and industry is more than sufficient to effect any change that may be necessary and that there is practically no limit to be placed upon our capacity to build a merchant marine. This will be a revelation to our friends upon the Clyde, who have fondly imagined, and indeed had good reason to do so, that they were par excellence the shipbuilders of the earth. It is not intended to cast any reflection upon them that we hail with acclamation the advent of an American shipbuilding industry, and with it a new field for the absorption and disposition of a vast tonnage of American coal. The ostrich-like policy which was inaugurated by us as a war measure and kept in force long after there was any necessity for its existence, has wrought this land a cruel wrong, but in the words of the old adage, 'it is never too late to mind.'

"It is a recognized thing by the statesmen and far-seeing business men of this country, that affairs have come to a pass where the inception and progress of American trade abroad has become more than a desirability. There exists on every hand a wide market and a vast constituency which might with our well known methods of business fall into our hands, provided, of course, that we had, in the first place, the means of reaching it, and, in the second, the *amour propre* to make a fight for it. Now events have already demonstrated in a variety of places, that we can compete with success against those who have been for a long while in the possession of foreign marts of trade. This is notably the case in the West Indies, where American merchants are playing havoc with long-standing relations with Europe. Our trouble has been on the score of a lack of the facilities of transportation. Only a little while ago a prominent coal shipper of New York found it necessary to cable to London, in order to obtain a ship to transport some five thousand tons of American coal to a South American port. This is nothing less than an absolute scandal and one that should serve to put us upon our mettle in this matter. American ships we must have, and it is a source of supreme satisfaction to know that the end of our present disablities is approaching and that if we do not acquire them by purchase from abroad, we can at least build them ourselves. Our present achievement will stimulate the progress of the good work and it may be that fiscal affairs will assume a phase which will contribute toward hastening this result. One thing is certain, and that is, that every additional American bottom means the increase of American trade abroad and incidentally the exportation, either as merchandise or ballast of native fuel.

"The prognostications and assertions of this journal for the last six years have constantly and irrefragably been to the effect that this country could make but little progress without a native shipping industry, and that the advent of that factor in our national existence would ultimately mean the supremacy of our merchants in the market, of not only Central and South American, but even in Europe and Asia, where competitive factors were a feature of the foreign trade. So far as the direct interest of the coal trade is concerned it need only be adduced that the foreign shipping of fuel done by British colliery agents amounts in round numbers to the figure of about thirty millions of tons per annum, and that the great bulk of this trade would undoubtedly fall into our hands. We have won of late with American coal some really remarkable triumphs, and there can be no question but that the moral is one which is being appreciated very fully abroad. We have only committed one sin—we have been too supine. But there appears to be a general movement all along the line looking to the branching out of our merchants to foreign fields, and to the honor of the coal trade be it said it is taking a a strong and active stand in the forefront of the fight. Eastern and southern coal operators have already trended upon what has been regarded by Britain as her sacred commercial territory, and this is but the insertion of the thin end of the wedge. With a free supply of American bottoms, American commerce will advance by leaps and bounds until it is indeed and in fact the first and foremost of the world.

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CLEVELAND, O., FEBRUARY 8, 1894.

THE Lake Erie fishermen come no nearer an agreement as to desired legislation than they have done before. The bill drawn up at Sandusky is certainly a curiosity, and a study of its provisions brings one to the conclusion that there should be more of a blending of legal with practical knowledge.

ACCORDING to present indications, the Wilson bill is likely to be pretty roughly handled before it gets through the Senate. It is very probable that the reason placing ore on the free list received so little opposition in the House was the general impression that they were merely leaving a margin for a compromise, when the bill should be turned over to the conference committee. It looks now as if the next tariff law will place a duty on iron ore of about forty cents per ton.

THE details, as given to the public through the daily newspapers, about the terms on which a large block of Pewabic ore was to be brought down from Escanaba, have resulted in a great many contradictions and some recrimination on the part of parties alleged to be interested in the deal. The story was first to the effect that the Milwaukee Tug Boat Co., which has for years had the contract for carrying the Pewabic ore, had taken the contract at 70 cents. That company comes to the front with an indignant denial, and it is next stated that Cleveland owners took the contract, and not only that, but they agreed to carry it for 60 cents, and on this hypothesis the *Evening Wisconsin* launches out into a tirade against the Cleveland vessel owners, who resort to such cuts while talking up a freight agreement, and charge that the whole agreement is a blind. The *Wisconsin's* deductions would not be far out of the way were the charges correct, but investigation pretty well settles the fact that no Cleveland owner took the contract, but that Buffalo parties did take the 120,000 tons of ore, which has been bought by the Carnegie Steel Co., Limited, at the mine, at the rate of 60 cents.

SOME person who is apparently interested in throwing cold water on the proposed freight agreement imposed upon an Associated Press reporter to the extent that the latter sent out from Chicago a few days ago a dispatch stating that nobody had signed the agreement in Chicago and that so much grain was being taken by the boats that it meant death to the agreement. Now this is rather a deliberate misrepresentation. The committee appointed to formulate the agreement have never yet held a formal meeting to approve or amend the plan originally drawn up, which has been published all around the lakes. Mr. M. A. Bradley, the chairman of this committee, has been absent from Cleveland for several weeks, and has only been home a few days. When the plan of agreement is finally drawn up it cannot be signed until it is approved by a meeting of vessel owners to be held in Detroit early in March, although the members of the committee are expected to make a canvass so as to report at that meeting what per cent of the tonnage can be counted on. As a result of this arrangement, it is a natural result that nobody has signed the agreement, simply because there has been none to sign. The placing of grain in boats at Chicago is something that occurs every winter, and the plan of agreement now drawn up contains provisions for arranging this very matter on an equitable basis. Of course there is no certainty that the agreement will receive the necessary signatures. Experience has shown that under such circumstauces as obtained previous to last season, the contrary might have been expected. But such a story as that which emanated from Chicago this week gives ground for the suspicion that the attack was premeditated.

A PROGRESSIVE BODY.

Nothing could better demonstrate the rapidly increasing realization on the opposite side the Great Lakes, of the importance of the inland water commerce, than the action taken by the Canadian Marine Association, at their annual meeting in Toronto last week, the proceedings of which are given at length elsewhere in this issue. The spirit of the resolutions show a development of the wide-awake energy and quickness to see and use opportunities as they turn up, which has given the Lake Carriers' Association and its constituent bodies such wide influence on this side, and such success in developing the lake trade. In no one instance is this more clearly shown than in the recommendation that the Dominion government should remove the tariff on coal, which would probably give the Canadian lake fleet more assistance than any other single measure that could be enacted for their benefit. It is needless to say more on this subject, for the results are obvious to everyone.

The protest against the duties on manilla rope and on ships' repairs merely point out inconsistencies which are found in every tariff bill, which are, of course, most apparent to the trades affected by them. When such inconsistencies are pointed out in such a clear manner, it is certainly the duty of every government, whether its policy be high or low tariff, to investigate as soon as attention is called to them, and to lose no time in correcting injustice.

The suggestion that the government adopt the more liberal American policy of throwing the canals open free of tolls entirely is in accord with the spirit of advancement, and just now, when the new Canadian Sault canal is about completed, is especially worthy of attention.

The charges of the Kingston dry-dock were fixed by the Dominion government, according to the statement of Chief Engineer Coste, of the Department of Public Works, at a slight reduction from the charges as fixed by the Dry Dock Association of the Lakes. The Canadian Marine Association protests that these charges are heavier than at the other Canadian docks, and it hardly seems just to fix charges by an American standard, when there is probably such a wide difference in the cost of materials and labor. The last annual meeting of the Canadian Marine Association has certainly sounded the keynote to the advancement of Canadian shipping interests, and their competitors on this side will have to keep their eyes open.

STEAM LIFE-BOATS.

Every few weeks some mention is made of one new contrivance or another for the mechanical propulsion of life-boats, and the steam life-boat is described elsewhere in this number. This seems to be the best ever invented as the propulsion gets over the difficulties besetting paddles or screws, both of which are liable to be knocked away or broken.

The main reason for inefficiency at certain times, of life-boats in cases of the direst distress, has been the impossibility for the crew to make any headway rowing into the wind and a heavy sea. The boat connot always be towed to windward of the vessel in distress, and even in that event the boat is likely to be carried off to leeward while trying to come up to the wreck, thus losing the power to assist. Cases are within the easy recollection of most lake men, where considerable loss of life might have been averted had there been a steam life-boat to give assistance. The boat described in this issue is said to be practically non-sinkable, and the claim is put forward that she will make upwards of nine miles an hour in a sea. These claims have surely had practical tests during the time the steam life-boat has been in the service at Harwich, England, where she was stationed nearly two years ago.

The steam life-boat is undoubtedly destined to become the apparatus of the future, although many of the craft now in use will be retained for many years at the less important stations. This country should not follow far behind Great Britain in the adoption of such inventions, and if they continue to prove successful one or more will doubtless be seen on the Great Lakes before many seasons elapse.

PILOT CHART OF THE NORTH ATLANTIC.

THE RECORD is in receipt, from the Hydrographic Offices at Washington and Chicago, of copies of the pilot chart for February of the North Atlantic. This is, without doubt, the most complete chart of its kind ever issued. Prevailing winds, storm tracks, calm areas, and currents are carefully indicated upon the chart, as well as lines showing the sailing routes. On the margins are explanations of the American and British weather signals, with a review of the hydrographic developments of January and a forecast for February. It is wonderful how much valuable information can be crowded into such limited space and still preserve its lucidity. On the reverse side appears an admirable paper on "The Formation and Growth of Waves at Sea, and the Best Substances to Use for Lessening their Destructive Effects," by Mr. G. W. Littlehales, assistant in the Hydrographic Office.

OWING to the printers being unable to make out the signature, the wrong name was signed to the very interesting communication last week on the possibility of volcanic action beneath the waters of the Great Lakes. The article is from the pen of Mr. A. O. Kruger, United States inspector of hulls at Marquette. The suggestion of Mr. Kruger is certainly worthy of careful consideration, and his theory should be looked into by the Hydrographic Office.

CONGRESS is showing a disposition to do the right thing, in spite of the prevailing tendency to economy, in preparing for the compilation of a more modern set of charts for the Great Lakes. The sundry civil bill appropriates at least enough money to get the work well under way, and once started it will be carried on without difficulty.

ALL MOURN MR. ELY.

Resolutions of regret on account of the death of the late Hon. George H. Ely have been adopted by many of the leading trade and financial organizations of the country, including the American Protective Tariff League, the National Board of Trade, the Western Iron Ore Association, and the Cleveland Chamber of Commerce. Dr. Hiram C. Hadyn, pastor of the First Presbyterian church, of Cleveland, preached a memorial sermon on the death of Mr. Ely, who was an elder in that church. It was throughout a glowing and heartfelt eulogy. The following extract is taken from the sermon:

"As a citizen, the various positions of trust to to which he was called better than anything else attest the estimate placed upon his character and services; and the resolutions but just now framed and adopted by the various organizations with which he was associated, travel out the beaten path of formal respect to express an unusual warmth of consideration for the man with whom they had become identified.

"In him the civic spirit was strong. He loved our city. He was proud of its history. He believed in its future. He sought its welfare. Most likely it was in pursuance of his chosen association that he was led into those investigations which made him an authority in all matters pertaining to the commerce of the lakes, so much of which centers here. But these labors soon passed all private bounds and considerations. The facts which he set forth with lucid statement and fullness of detail were, at first, a surprise to the public, and then the basis of a long series of efforts for the improvement and utilization of the great natural advantages presented in these great inland lakes and rivers. It was in pursuance of what he considered a public duty, to which he was urged by many citizens, that he went to Washington at the risk of his life."

HYDRAULIC PROPULSION.

A floating steam fire engine with hydraulic propulsion, built for the Chamber of Commerce, Alexandria, Egypt, and intended for service on the Mamoudich Canal, to protect the numerous cotton warehouses which line the banks, has just been tried. The boat is 60 feet in length and 10 feet 6 inches in beam with a draft of water of only 18 inches in full working order; it is flat bottomed, built of steel. The fire engine, which is also the propelling engine, consists of two steam cylinders and a pair of double acting gun metal pumps. The boiler is a vertical one with a working pressure of 100 pounds per square inch. The water first flows into a tank through suction inlets on either side of the boat. These inlets are fitted with strainers to prevent the inflow of grit; and when it is advisable, on account of the boat being close to the bank, either of them can be closed. The supply pipes of the pumps draw from the tanks instead of direct from the canal. The capacity of the pumps is 2,000 gallons per minute, and a single jet can be thrown 200 feet high.

The novelty of the vessel is the simplicity of its means of propulsion. There is no screw, paddle wheel, nor separate propelling engine—it is driven by the fire pumps. The water raised by the pumps is ejected through a 1½ inch nozzle, placed amidships on either side of the vessel, and just above the water-line. By this means the boat is driven at a speed of from four to five miles an hour. The position of either of these nozzles can be reversed in a second by means of small hand wheels close to the steering wheel, and when it is desired to stop immediately the jets are directed downwards. Thus it can travel as easily astern as it can ahead, and by reversing one nozzle, can turn in its own length.

At the trial steam was got up in ten minutes, and first one and then two 2½ inch jets were thrown. The hose was then connected to the other delivery outlets, and six jets 1¼ inches in diameter were worked simultaneously. Finally the water was directed through the propelling nozzles, together and separately, to test the manoeuvering qualities of the boat.

CANADIAN MARINE ASSOCIATION.

The annual meeting of the Canadian Marine Association was held last week. The following officers were elected for the coming year: President, W. A. Geddes; first vice-president, Mr. Thomas Marks; second vice-president, Mr. R. O. Mackay; secretary and treasurer, Capt. J. V. Trowell; executive committee, Messrs. J. B. Miller, S. Neelon, G. E. Jacques, Capts. Crangle, Gaskin, Fairgrieve, Sylvester, and Mr. C. Myles.

Mr. D. G. Thompson addressed the meeting on the question of free canals in the Dominion, and made the statement that during the past season 95 per cent. of the tolls had been paid by the grain, thus showing that it was a tax on the western farmer's product, and it was in their interest for the tolls to be abolished.

The following resolutions were carried by the Association:

Resolved, That the Association was highly gratified when they learned that the Dominion government had resolved to build a dry dock at Kingston, of sufficient capacity to take vessels of the full size of the Welland canal, as such a dock was a pressing want, seeing that there was no such dock on the Canadian side below Port Dalhousie. However, its usefulness has been materially impaired, on account of the high tariff charged for docking: viz. 20 cents per gross ton. This rate is much higher than that charged for a similar service in other Canadian docks and equal and exceeding that charged by American docks. The high rate charged has been the means of reducing the revenue of the Kingston dock, because if vessels are able to get to the Welland canal they will not have to pay so high a rate. Therefore this Association would call the attention of the government to this matter, and trust that they may see the wisdom of reducing the tariff to such a level as will not drive work away from the Kingston dry dock.

Resolved, That the Association would respectfully draw the attention of the government to the excessive duty on Manilla rope, used largely by vessels, the duty being about 2¼ to 2½ cents on an article that only costs from 10 to 13 cents per pound in Canada, and 7 to 8 cents per pound in England. The Association would also draw the attention of the government to the fact that a combination has been formed in the Dominion for the manufacture of rope, said combine being detrimental to the vessels and the good of the country. In the opinion of this Association the duty should not exceed one cent per pound.

RESOLVED, That the law, as it now stands, fixing a high rate of duty on repairs made upon Canadian vessels in American ports, is most unjust, and bears very hardly upon our lake marine. Under the present state of affairs a vessel may be built in the United States, brought into Canada and be registered as a Canadian vessel upon a duty of only 10 per cent., while should a Canadian vessel through necessity repair in an American port the duty on those repairs is 25 per cent. In the former case a commercial enterprise is taxed 10 per cent; in the latter a misfortune is taxed 25 per cent. Therefore be it resolved that this association urge upon the Dominion government that the marine interests should be enabled to make the necessary repairs in case of disaster so as to place the vessel in a seaworthy condition at the first available port, and that no duty should be charged on those repairs.

RESOLVED, That in view of the prospects of the free admission of Canadian coal into the United States through the operation of the Wilson bill, therefore be it resolved, that this association would urge upon the Dominion government to reciprocate in this matter, as, in the opinion of the association, it would be of decided benefit to the manufacturing and marine interests of both countries.

RESOLVED, That this association regrets that as yet the Dominion government has not taken any action in regard to the granting of a site for a public grain elevator at Kingston, and would again respectfully impress upon them the necessity of immediate action, as it was plainly evident last season that a large portion of the export trade was diverted.

The question of wages was brought before the meeting and last year's tariff, with a few minor alterations, was adopted.

The following gentlemen were appointed as a delegation to Ottawa to place the views of the association before the government: Messrs. Crangle, Gaskin, Geddes, Marks, Thomson, Neelon, Fairgrieve and Sylvester.

KIND COMMENTS OF CONTEMPORARIES.

THE MARINE RECORD (Cleveland, Ohio) of Jan. 25th, contains a large and beautiful supplement showing well executed pictures of the latest steel passenger aud freight steamers built on the lakes, the production of the American Steel Barge Co. (whaleback steamer Christopher Columbus) Globe Iron Works, Chicago Ship Building Co., Cleveland Ship Building Co., Craig Shipbuilding Co., Toledo, Ohio; F. W. Wheeler & Co., West Bay City, Mich.; Union Dry Dock Co., Buffalo, N. Y., and others. Messrs. Smith & Swainson, proprietors of THE RECORD, are to be congratulated on their enterprise in getting out this elegant supplement, which is well worth framing. The painting from which the engraving was made was executed by Howard Sprague, the Jacobson of the lakes.

THE MARINE RECORD, of Cleveland, issued a very handsome supplement last week of "Prominent Lake-Built Steamers," which included the Christopher Columbus amoug the rest.—*West Superior Inland Ocean.*

MR. ROCKEFELLER IN CONTROL.

The annual meeting of the Duluth, Mesaba & Northern railroad, which is a part of the assets of the Consolidated Mine Co., was held at West Superior Tuesday, and resulted in an entire change in the personnel of the officials. Alfred Merritt, the former president, retires, and his successor will be elected at an adjourned meeting to be held later in New York. S. R. Payne was elected secretary, and William Allebone was elected treasurer to look after the Rockefeller interests. D. M. Philbin has been retained as general manager. The Merritts built the road and held all the important offices, but the control has now passed to the Rockefellers, together with that of the Lake Superior Consolidated Mines. The meeting of the Lake Superior Consolidated will be held in New York in a few days, and Lon Merritt; the president, will retire to make room for a Rockefeller man. Instead of the pool itself holding a meeting, all the leading mines held meetings. The annual meetings of the Adams-Shaw, Great Northern, Mountain Iron and Biwabic mines were held Tuesday and all were placed under the control of one set of officers. W. J. Alcott, formerly manager of the Penokee and Gogebic mines for Rockefeller, was elected president and general manager of all these mines; E. H. Hall, of Oneota, secretary, and N. C. Merritt, treasurer. Different directors were elected for each company, but the majority of them were Rockefeller men. The same course will be pursued at the other meetings and the Merritts are clearly out, at least for the present. The new management give it out that they will start operation in the mines as soon as the season will permit and there will be no curtailment in the output.

OBITUARY.

Capt. Nels Peterson, aged 60 years, died at his home, No. 100 Park street, Chicago, Saturday night, from peritonitis, after an illness of four weeks. The deceased came to this country from Norway in 1857. In 1860 he first sailed on the lakes as master of the brig Clark. In 1863 he was master of the schooner Hercules and shortly after he built the schooner Colonel Heg, which was named after the colonel of the 15th Wisconsin Infantry. More than twenty years ago he built the steamer North Cape at Green Bay, Wis., and ever since she was launched he had trod her deck as master and laid her up in winter quarters only a short time ago.

Capt. Nels was well known as a careful captain and has been particularly fortunate as regards disasters, having never been in a wreck on the lakes. He was much esteemed among marine men, whose regret at his death is sincere. He was a widower, having lost his wife ten years ago. He leaves a grown up son and daughter, also his mother, aged 94 years, and two brothers. The funeral took place at Graceland cemetery, Tuesday afternoon, and was attended by a large number of his old marine friends.

NOTES OF THE MINES.

The lease-hold of the Dunn mine in the Lake Superior for which the Schlesinger syndicate paid $85,000 several years ago, was sold week before last under the hammer for $28. Among unpaid obligations of the mine were $22,000 for royalties and $10,000 for freight.

The Canton has made a hoisting record of 1,038 tons in twenty-four hours.

Frank X. Falcon, the discoverer of the coal mine near Lake of the Woods, says the St. Paul *Dispatch*, has returned home to begin operations in sinking a shaft as soon as possible. He and the other members of the company recently formed, have secured 960 acres of land, all they were able to find with traces of coal upon it. Mr. Howells, of Duluth, the financial agent of the concern, it is said, has made all the financial arrangements necessary in Chicago and the company will push the work on the prospects both on the Canadian and American side of the lines during the coming summer.

Receiver Price McKinney, for Corrigan, Ives & Co., will at once put the recently acquired Buffalo mine in condition for working, but a resumption of mining operations will depend upon the iron market, and the movement of ore already in piles or on docks. It is the object of the new management to resume just as soon as any profit, no matter how small, may be reasonably expected to result.

LITERARY NOTICES.

The late Miss Woolson is said to have left no unpublished manuscripts with the exception of one or two in the possession of *Harper's Magazine*. Her short stories were in great demand and rarely remained long in the publisher's hands before being printed. "A Transplanted Boy." in the February *Harper's*, was written two years ago, and is one of a series of sketches of Italian life, of which enough were finished to make a small volume.

The Buffalo *Express* of last Sunday contained a handsomely illustrated account of the opening of the Niagara Falls water power.

The Jan. 19th issue of *Transport*, a leading London shipping paper, contains a supplement, in colors, showing a plan of Quebec harbor, including the Princess Louise embankment and docks. An extended description of that harbor is found in the body of the paper.

The last issue of the New York *Marine Journal* is handsomely supplemented with an engraving of the new American Trans-Atlantic liner St. Louis, accompanied by portraits of Charles H. Cramp, president of the company building her, and of Mr. Clement A. Griscom, the head of the International Navigation Co., which will operate the steamer.

FLOTSAM, JETSAM AND LAGAN.

J. V. O'Brien, of Oscoda, Mich., has sold to Baker Bros., of Detroit, the steamer T. W. Snook for $2,500.

The Niagara Falls Park & River Railway Co. will probably build a bridge from the Canadian side to Navy Island and thence to the American shore.

A bottle containing an address, thrown into Lake Michigan last summer has been picked up in the Upper Mississippi river.

The Grand Trunk has decided to build the proposed single arch bridge across the Niagara. The new bridge will be a steel arch structure, which will rest upon two ledges of rock formed midway between the water's edge and the top of the bank. The bridge will be about 600 feet long and cost about $200,000.—*The Canadian Engineer.*

Mr. A. Lumsden, of Ottawa, has sold his valuable timber limit on Lake Temiscamingue for $305,000 to the Arthur Hill Co., which is composed of Messrs. Hill, Quinn, Whitney and other American lumbermen. This limit, which was purchased by Messrs. W. C. Edwards & Co. as part of the Maclaren estate, not long ago, was resold to Mr. Lumsden for $90,000, and that gentleman, after taking out a large quantity of square timber, has disposed of it as before stated for $305,000.

Another project is afoot for developing power at Niagara. The Niagara County Irrigation and Water Supply Co., which is controlled by the Model Town Co., is about to begin the construction of a power canal from the upper Niagara river, about five miles above the Falls, to the lower river, developing power at the "Terrace" at Lewiston, where about 220 feet head is available, with a second station at the lower river, where there is about 100 feet available head. The entire canal to be about ten miles in length.

The steamboats City of Buffalo and Western Metropolis, which were built somewhere about 1854, and ran between Buffalo and Cleveland, were not only as luxuriously and elegantly fitted out for that route in those days as the Sound steamers are at the present time, but they even went so far as to have fountains playing on the upper deck, with scores of goldfish in handsome receptacles, wherin the water from the fountains fell. The effect was a magnificent one, and afforded great pleasure to the passengers, especially the women and children.—*New York Marine Journal.*

There is an ingenious device on trial in the pilot house of steamship El Norte, by which a dial and indicator are connected with the bell-pull, and which indicates whether the engine is going backward, ahead or at full speed or at a full stop, through its connection with the air pump below. This indicator on the dial also gives the number of revolutions that the engine is turning up. If it does what is claimed for it, it will prevent the possibility of a mistake in the bells, which has so often been the cause of controversy between the engine and deck department.—*Philadelphia Commercial List.*

M. Blondin, now in his 71st year, is giving marvelous performances upon the high rope at the Crystal Palace, London. In 1861, he walked across the Niagara Falls on a rope 1,100 feet long, stretched at a height of 160 feet above the torrent. At the Crystal Palace his performance is upon a rope stretched across the center transept at a height of 60 feet from the ground. The rope, which is an inch and three-quarters in diameter, is made of steel wire, covered with six strands of manila, and from anchor to anchor it is 400 feet long. Blondin walks across the rope blindfolded, stands on his head, carries a man on his back, and performs other feats, all of which are accomplished with the old grace and daring.

As a general thing English vessels use hemp duck canvas, whereas American vessels always use cotton duck. Cotton duck holds the wind and the sails set flat, where the English sails, after the starch washes out of them, are like bagging stuff. They often have to carry a hose with them to wet the sails to help them hold the wind. The yacht America certainly could not have outsailed all the swiftest yachts of Great Britain if it had not been for her well made American sails. English sails when first used are very stiff, and hold up to the wind well, but after they have been used a short time they become almost useless. Nothing is as good for sails as American cotton canvas, for the longer it is used the tighter it gets.—*N. Y. Sun.*

MECHANICALLY PROPELLED LIFE BOATS.

It may be remembered that about two years ago the National Lifeboat Institution placed on trial at Harwich the first mechanically propelled boat intended for life saving purposes. This vessel, named the "Duke of Northumberland," was constructed by Messrs. R. and H. Green, the widely known shipbuilders of Blackwall, and engined by Messrs. Thornycroft, of Chiswick. She is 50 feet long, 12 foot beam, and her loaded displacement at 3 feet 6 inches draught is 23 tons. Her propelling machinery consists of a horizontal compound surface condensing engine of about 170 horse power, driving a nearly horizontal turbine of 30 inches in diameter, which delivers its water through two outlets in the sides of the boat, and draws its supply through a vertical scoop-shaped inlet amidships. The boiler is one of Mr. Thornycroft's patent water tube type with a heating surface of 606 square feet, and grate surface of 8½ square feet. This boat, after going through an exhaustive series of trials, making during one of them the passage from Harwich to Holyhead, a distance of 1,000 miles, without the least mishap, was eventually placed on the station at Harwich, and has since done excellent service in the saving of many lives and much valuable property. The success attained suggested the construction of two other boats by Messrs. Green, one for the Royal National Lifeboat Institution and the other for the Lifeboat Institution of South Holland. These vessels have the following principal dimensions: Length, 53 feet; beam, 16 feet; depth, 5½ feet, and their loaded displacement is 30 tons, giving them a draught of 3 feet 3 inches, at which they will carry from 30 to 40 passengers, 4 tons of coal in the bunkers, and half a ton of fresh water in their reserve tanks. The first of them—or that intended for the Royal National Lifeboat Institution—launched some months ago, is nearly ready for her official trial; the second—that for the kindred institution for South Holland—was launched on Friday of last week. Instead of propulsion being dependent, as in the case of the Duke of Northumberland, upon one turbine and inlet to feed it, the new vessel is fitted with two vertical centrifugal pumps placed on the starboard and port sides, driven direct from the crank-shaft—to which they are coupled and co-axial—of an inclined compound direct-action engine of 200 horse-power. For forward and backward motion, go-ahead and go-astern, outlets—the former in the bottom and the latter in the sides of the vessel—are connected by pipes to each of the pumps, and to give a lateral propulsion to the boat a special side outlet has been arranged—which has been patented by Mr. J. F. Green both in England and abroad—the advantage of which when manoeuvering round a wreck is considered invaluable, as the water can be discharged through the outlet nearest the wreck, and thus act as a buffer and fender in keeping the boat and the wreck from colliding, and assisting it by sideways propulsion in getting clear away when desirable. The buoyancy of the new vessel has been very carefully considered, and to add to her safety she is divided into no less than thirteen watertight compartments, but should one of these be stove in provision is made to connect it with the centrifugal pump inlets in such a way that the flow of water would be utilized for the boat's propulsion. The boiler for supplying steam to the compound engine of the vessel is of the water-tube type, and will, together with the whole of the propelling machinery, be fitted by Messrs. John Penn & Sons, of Greenwich. It is expected that the official trial of the first of the improved type of steam lifeboats will shortly take place.—*Engineering*.

TONNAGE ADMEASUREMENT.

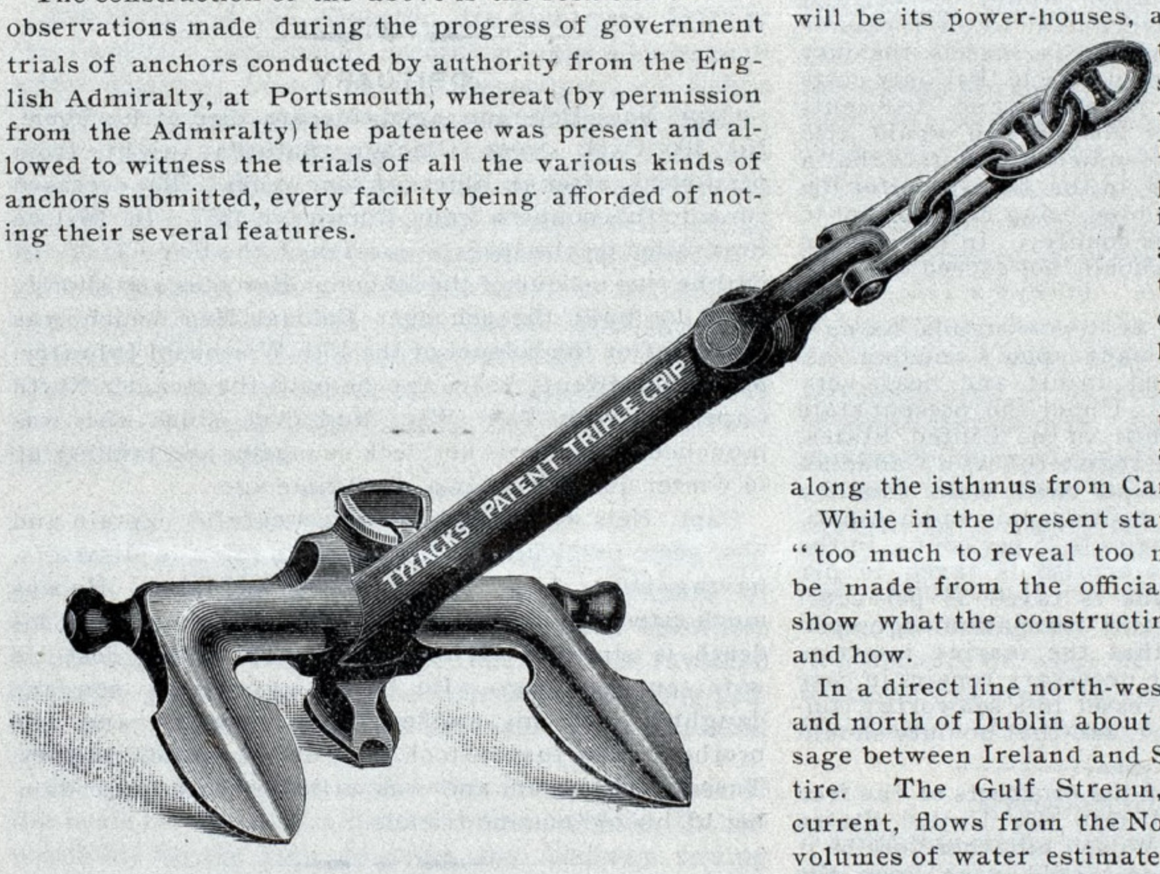
In speaking of a ship of a given tonnage displacement, as is commonly done in the case of warships, the displacement refers to the weight of water displaced by the vessel. If an object displaces an amount of water weighing more than it does, it floats; if it displaces less water, it sinks. A vessel sinks into the water until the amount of water it displaces is equal to its entire weight. Register tonnage, on the other hand, is the tonnage chiefly referred to in merchant vessels, and is the unit on which the assessment of dues and charges on shipping is based. A register ton is 100 cubic feet of internal volume, and thus a vessel of 1,000 tons register has 100,000 cubic feet of internal space between the points of measurement prescribed by the law. The system at present in force is known as the Moorsom system, having been devised about a century ago by an English gentleman of that name, upon very apparent mathematical principles, in order to reduce the record of vessels' sizes to a positive standard. This system is now in force by Great Britain, the United States, Denmark, Austria, Germany, France, Italy, Spain, Sweden, Netherlands, Norway, Greece, Russia, Finland, Hayti, Belgium and Japan, but it has only been adopted by the majority of these countries within the last twenty years, and was brought to uniformity by the construction of the Suez canal more than by anything else, the rules of the International Tonnage Commission, assembled at Constantinople in 1873, forming the basis of dues levied on the ships of all countries passing through that canal.

Gross tonnage expresses the gross cubical interior space of a vessel; net register tonnage the cubical space actually available for freight carrying purposes, the space occupied by engine room and quarters of the crew, etc., being deducted from the gross. The owners generally advertise the gross tonnage of a ship, because it looks so much bigger; thus the Campania is 12,950 tons gross, but only 4,794 net register. The elaborate formula by which the register tonnage is ascertained, the interior of a vessel being measured in separate areas, is also applicable for finding the displacement tonnage, that is, the external displacement, measured by taking transverse areas to the height of the load water line to find the cubic content, which content, divided by 35, gives the displacement in tons weight, the difference between the light and load displacement representing the carrying powers of a vessel in tons, sometimes referred to as "builders' measurement."

The computation of tonnage by displacement is mainly used for war vessels, where the total weight is likely to be nearly constant. Register tonnage, gross and net, is used for commercial purposes. There is also yacht measurement, which is used solely for the proper classification of pleasure craft, and is computed from different data.

TYZACK'S IMPROVED PATENT STOCKLESS ANCHOR.

The construction of the above is the result of careful observations made during the progress of government trials of anchors conducted by authority from the English Admiralty, at Portsmouth, whereat (by permission from the Admiralty) the patentee was present and allowed to witness the trials of all the various kinds of anchors submitted, every facility being afforded of noting their several features.



The result proved that two-armed stockless anchors roll over, turn themselves out of the ground and lose their hold when a heavy strain comes upon them. The reason of this defect is easily traced in the fact that the strain from the cable through the anchor shank does not come in a direct line upon the lateral arms of the anchor, but is a cross strain, and unless each arm finds exactly the same bearing (which is practically impossible in ordinary holding ground) the drag upon the anchor becomes a one-sided strain with the inevitable result that the anchor loses its grip.

To remove this fault in stockless anchors, Tyzack's anchor is constructed with an additional third center arm, working at the same angle and upon the same axis as the lateral arms; this central arm is designed expressly to steady the action of the anchor, by taking the strain upon it in a direct line from the cable as in ordinary anchors. The central arm is of the much approved "Trotman's" type, having a "Rodger's" palm at each extremity, forming a pivot upon which the anchor can swing, and from the fact that when holding the three palms take the ground simultaneously, instead of only two, greatly increased holding power is thereby obtained; the fourth palm is always pressing upon the shank, and it therefore follows, that the greater the strain upon the anchor, the firmer it is forced into the ground. The anchor rests upon the points of three palms somewhat in the shape of a triangle, and being thus in a rigid upstanding position, is always ready to bite. It is also exceedingly simple in construction, moderate in cost, and can be worked into an ordinary shaped-circular hawespipe.

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A MODERN GIANTS' CAUSEWAY.

This is certainly the age of great engineering projects in bridge building, canal digging and tunnel cutting, while the later years of the century have seen the promotion of several notable schemes for power transmission, among which perhaps that at Niagara is the most conspicuous. The Niagara engineering enterprise rests upon the broadest grounds of feasibility, and the stability and skill with which its plans are being carried out give every promise of a brilliant and enduring success. Of some of the other projects, it is impossible to say as kind a word, strong as may be one's sympathies with daring and enterprise. In this category of the visionary, yet very interesting in its scope and suggestiveness, and worthy of record, is the plan seriously proposed for the electrical utilization of the tidal currents of the Irish Sea.

Early in February last the writer concluded a series of hydrographic surveys on the Antrim coast of Ireland, having been specially detailed to report upon a project to connect Britain and Ireland by a land junction. It was pronounced practicable, but the question was asked: What is the use? That part of Ireland is as wild as Africa. Mr. King, the engineer, should build his land junction some hundreds of miles further south, between Calais and Dover. A land junction between France and England would be all above ground and of more stability than bridge or tunnel. As there could be three or four passages for vessels, marine traffic would not suffer interference. But unfortunately, Parliament would never sanction the construction of such an isthmus.

The primary feature of the projected land-junction will be its power-houses, and their use in the generation of electricity from the strong currents always prevailing in that part of the Irish channel. The water-power there running to waste is such that, if utilized, power and lighting could be supplied to the districts for hundreds of miles around. Two power-houses would be ample; one for supplying the Scotch side, the other for the Irish side, and a railroad would run along the isthmus from Cantire to Antrim.

While in the present state of the project, it would be "too much to reveal too much,"—a few extracts may be made from the official specifications, which will show what the constructing engineer proposes to do, and how.

In a direct line north-west of London about 365 miles, and north of Dublin about 126 miles, is the narrow passage between Ireland and Scotland, at the Mull of Cantire. The Gulf Stream, supplying the continuous current, flows from the North Sea into the Irish Sea in volumes of water estimated at many cubic miles daily. The waterway between the head-land of Cantire in Scotland and Tor Head in Ireland is 15 miles wide, 474 feet deep at mid-current, but much shallower toward either shore. This is the position selected as offering the best engineering facilities for the creation of an isthmus as shown on the charts. The high bluffs of Cantire and the still higher land comprising mounts Clady, Escart and Carnlea near the Irish coast, from 900 to 1200 feet high, offer facilities for gravitating the materials requisite to form the isthmus between the opposite shores. The superficial extent of land required to form the isthmus would be a little more than a square mile, of the average width and depth of 100 yards.

There are no engineering difficulties in the way to prevent the immediate commencement of the undertaking, if favored by national approval and commercial enterprise. The importance and value of the results in the present aspect of affairs in Ireland cannot be overestimated. A land junction of Great Britain and Ireland would create a more perfect homogeneity of the united peoples. It would change the Irish Sea into a landlocked bay, lessened in depth by the cessation of the Atlantic current from the north, thereby serving to aid the natural drainage of the adjacent coasts, and make the marsh land of the east coast of Ireland capable of the highest forms of cultivation.

The cost of creating the isthmus would be about two million pounds sterling, and the time it would occupy would be about three years. To maintain a passage of ships to and from the North Sea to the Irish Sea, the Canal of Crinan might be enlarged and another cut through the isthmus of Tarbert.—W. R. LODIAN, in the *Electrical Engineer*.

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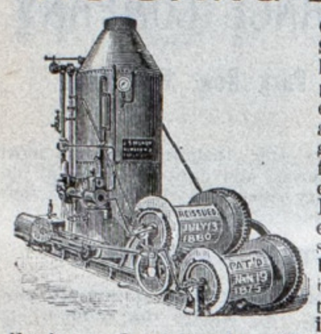

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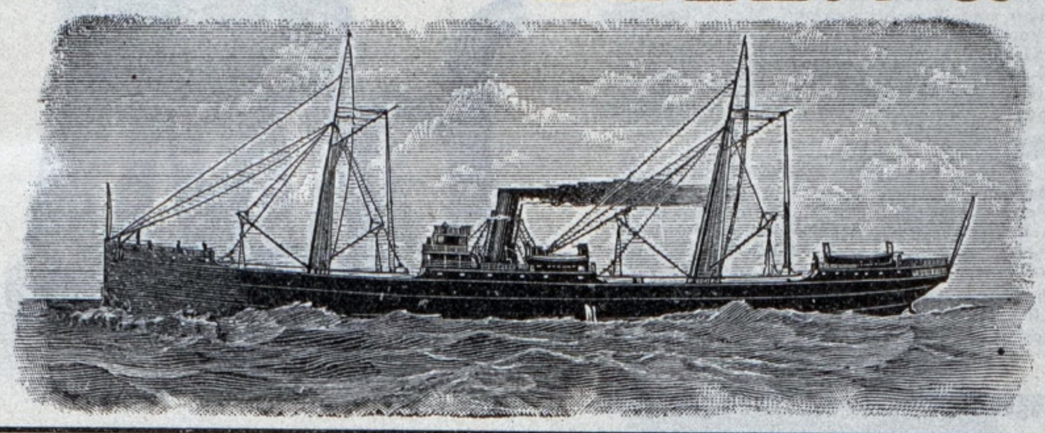

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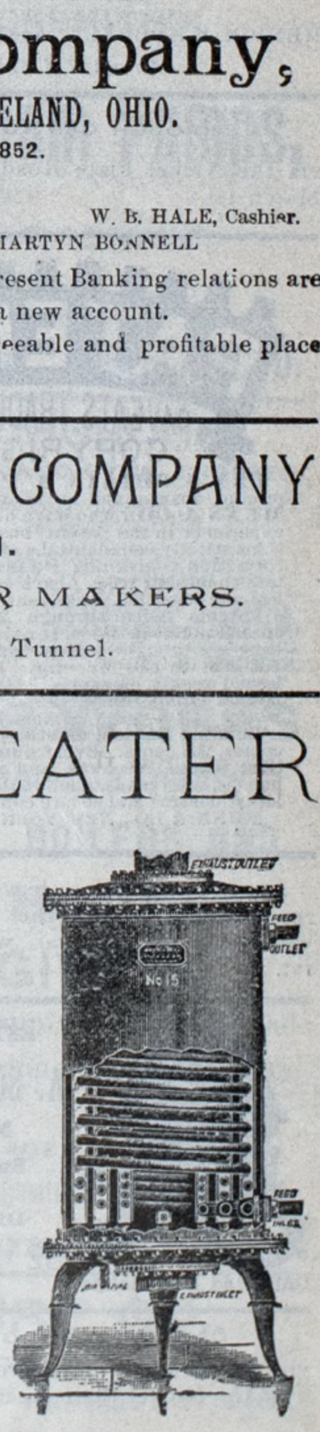

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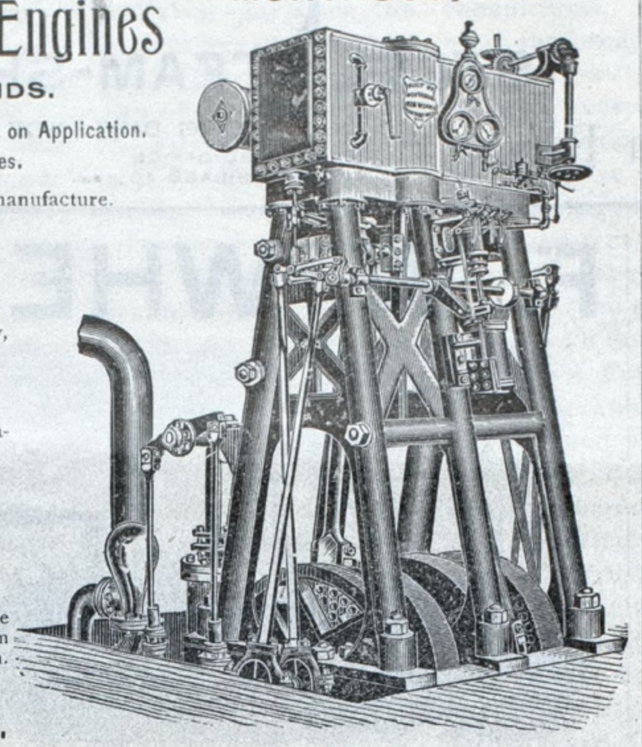

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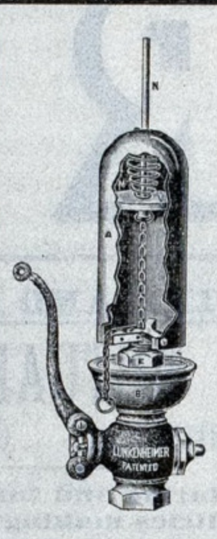

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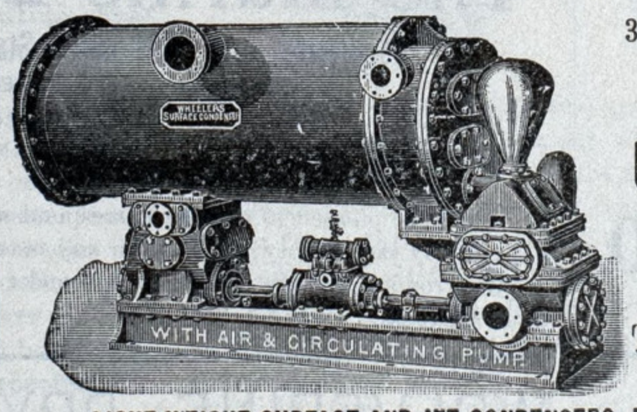

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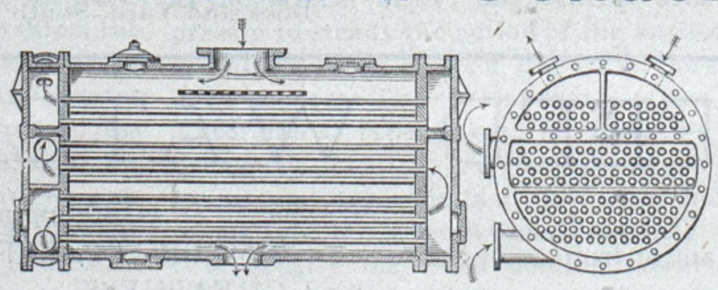

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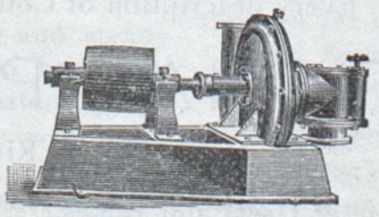

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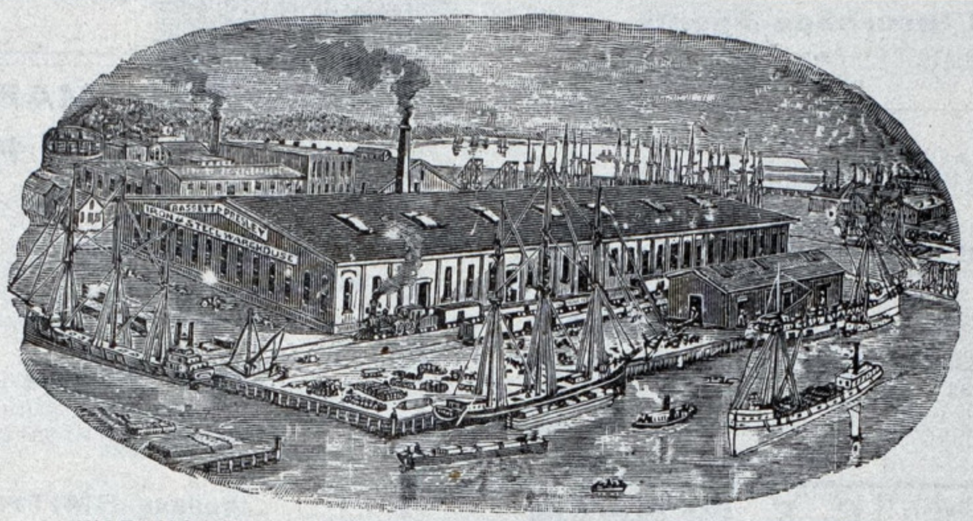

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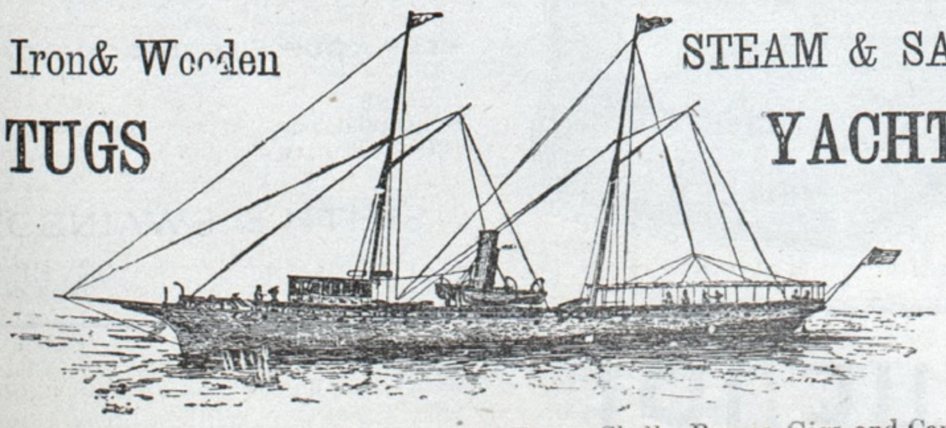

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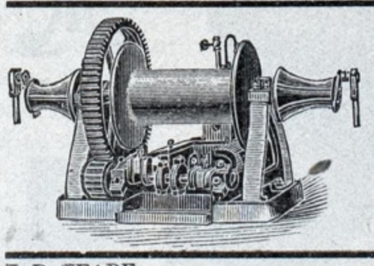

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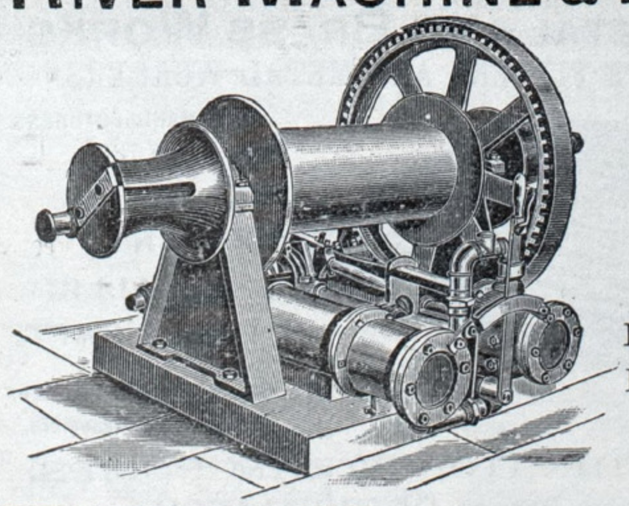

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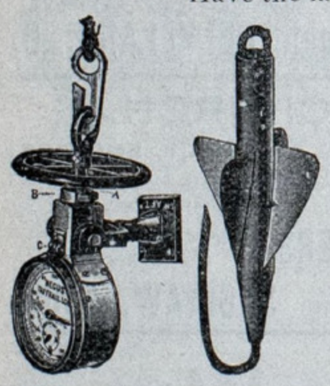

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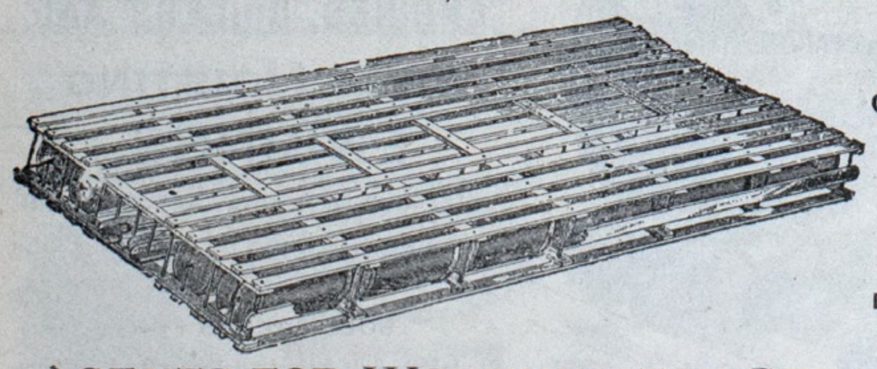

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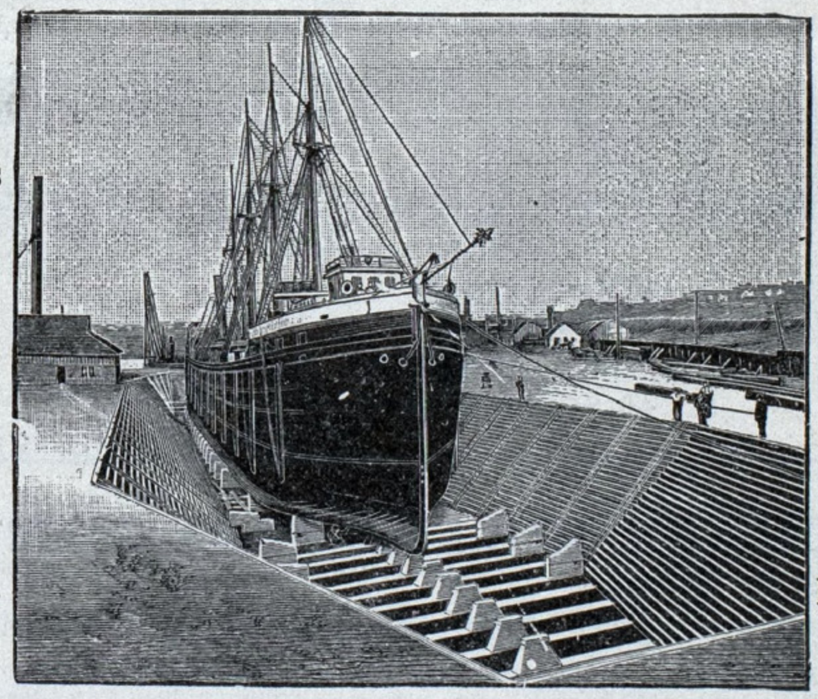

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